DOCUMENT RESUME

ED 346 102 SP 033 891

TITLE	Education for Self-Responsibility IV: Nutrition Education Curriculum Guide. Grade 5-Grade 8.
INSTITUTION	Texas Tech Univ., Lubbock. Home Economics Curriculum Center.
SPONS AGENCY	Texas Education Agency, Austin. Div. of Curriculum Development.
PUB DATE	92
NOTE	343p.; For grades K-4 and grades 9-12 curriculum guides, see SP 033 890 and SP 033 892.
AVAILABLE FROM	Texas Education Agency, 1701 North Congress Avenue, Austin, TX 78701.
PUB TYPE	Guides - Classroom Use - Teaching Guides (For Teacher) (052)
EDRS PRICE	MF01/PC14 Plus Postage.
DESCRIPTORS	Breakfast Programs; *Cultural Awareness; Cultural Pluralism; Habit Formation; *Health Promotion; Intermediate Grades; Junior High Schools; *Learning Activities; *Lesson Plans; Lunch Programs; *Nutrition Instruction; Parent Participation; Program Descriptions; Program Implementation; Special Needs Students; State Curriculum Guides
IDENTIFIERS	Child Nutrition Act 1966; Department of Agriculture; Food and Nutrition Services; Texas

ABSTRACT

This is the second part of a three part curriculum guide dedicated to improving the nutritional status of children and adolescents as well as inspiring lifetime habits of healthy eating. It is also a total nutrition education program that encompasses nutritional aspects of the child's daily life both at school and at home. Teachers are provided with specific grade-level lesson plans and learning activities that include student handouts and worksheets, teacher resource pages, and overhead transparency masters. The guide is organized into five sections. The first section describes the program and includes cultural awareness information, the interaction of nutrition education with school food service, parent involvement, and program visibility. Section 2 discusses implementation of the ESR IV curriculum guide. The third section addresses modifying ESR IV for special populations. Section 4 presents an instructor's resource guide for teaching nutrition education. The final section presents grades 5-8 nutrition lessons highlighting the influence of different cultural groups on Texas civilization. Nine appendices include: suggested teacher resources; bibliography; a pattern for daily food choices, and school breakfast and lunch patterns; recommended dietary allowances; a food composition table; dietary guidelines for Americans; a glossary of terms; suggested instructional strategies; and a health hotline of agencies and organizations. (LL)

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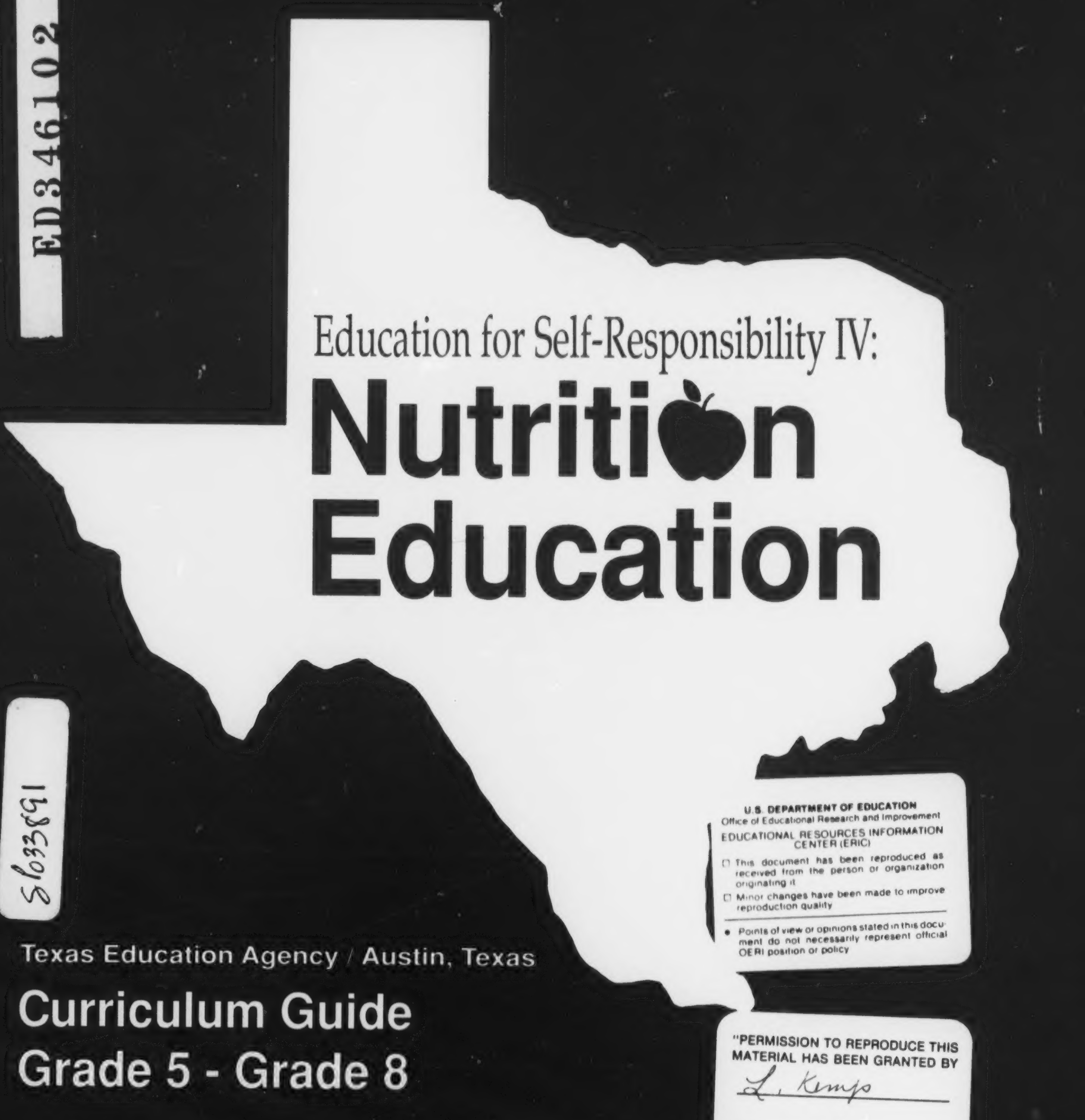

Education for Self-Responsibility IV:

Nutrition Education

SP033891

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Curriculum Guide
Grade 5 - Grade 8

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EDUCATION FOR SELF-RESPONSIBILITY IV: NUTRITION EDUCATION

Curriculum Guide

GRADE 5 - GRADE 8

Developed and disseminated by:

Home Economics Curriculum Center
Texas Tech University
College of Home Economics
Lubbock, Texas

Through a contract with:

Texas Education Agency
Division of Curriculum Development
Comprehensive School Health Programs
Austin, Texas

1992

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ACKNOWLEDGEMENTS

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The Child Nutrition Act of 1966, as amended, and the Child Nutrition Division of the Food and Nutrition Service of the U.S. Department of Agriculture through the Child Nutrition Programs Division of the Texas Education Agency provided funding for *Education for Self-Responsibility IV: Nutrition Education* and the accompanying training materials.

ACKNOWLEDGEMENTS

The Home Economics Curriculum Center at Texas Tech University produced the *Education for Self-Responsibility IV: Nutrition Education* curriculum guide with the help of committees of representatives from school districts, education service centers, universities, and other agencies and organizations from different geographic regions of Texas.

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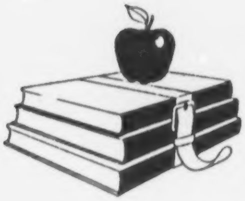
The Nutrition Education Program



EDUCATION FOR SELF-RESPONSIBILITY

Nutrition is a multifaceted science that affects all people, regardless of age, gender, or nationality. Changes in lifestyles, eating patterns, and eating habits have brought renewed attention to the relationship between nutrition and optimal health and wellness. Nutrition education is vital to the long range improvement of public health.

An integral part of educating children is helping them to understand their health and nutritional needs. Behavioral, emotional, intellectual, and physical growth is dependent on good nutrition and health care, and schools are the most effective community network for providing nutrition education. It is important to feed the mind with sound nutrition knowledge at the same time the child is making choices for feeding the body.

Education for Self-Responsibility IV: Nutrition Education (ESR IV) is a three volume curriculum guide dedicated to improving the nutritional status of children and adolescents as well as inspiring lifetime habits of healthy eating. *ESR IV* is a total nutrition education program that encompasses nutritional aspects of the child's daily life both at school and at home. The *ESR IV* curriculum guide provides teachers with specific grade-level lesson plans and learning activities that include student handouts and worksheets, teacher resource pages, and overhead transparency masters.

The *ESR IV* sample lessons contain instructional strategies that cover the following concepts:

- basic principles of nutrition including the relationship of good nutrition, health, and wellness
- development of skills needed to make wise food choices and to develop healthy dietary habits
- nutritional needs throughout all stages of the life cycle
- increased awareness of different cultures with emphasis on cultural dietary practices
- investigation and analysis of current nutrition issues including diet and disease, eating disorders, fad diets, weight control, and physical fitness as well as new developments and trends in the food industry

The *ESR IV* total program involves the entire school campus taking an active role in nutrition education. Administrators, teachers, school food service personnel, and school health professionals must work together to reinforce the new nutrition knowledge and skills for making wise food choices that are being taught throughout the *ESR IV* lessons. School vending machines filled with nutritious foods such as fruit, fruit juices, sandwiches, and yogurt strengthen the school's commitment to help students make wise food choices. The addition of salad bar selections and nutritious snack foods to the school food service program also support nutrition education in the classroom. Finally, it is critically important that school personnel serve as role models by making wise food choices themselves.

Through scientific and clinical research, much has been learned about the nutritional needs of children and adolescents; however, this knowledge must be interpreted and applied to their lives in order for the full potential of nutrition education to be accomplished.

CULTURAL AWARENESS

The *ESR IV* curriculum guide contains additional teacher resource information entitled, "Cultural Awareness." These units are found at the beginning of each appropriate grade-level section and describe the influences of different cultural groups on the people of Texas.

Beginning with prekindergarten and continuing through the eighth grade, the "Cultural Awareness" sections summarize the influence of Native American, Mexican-American, African-American, German, Czech, Polish, French, Irish, Italian, Middle Eastern, and Asian-American cultures on Texas civilization. Detailed information concerning the food habits, lifestyles, folkways, and celebrations of these varied cultures is discussed in these units. The unit that precedes each grade-level section corresponds with the cultural group that is to be emphasized at each grade level.

The *ESR IV* curriculum for high school students emphasizes diet-related diseases, prevention techniques, and current nutrition issues rather than a specific culture; however, *ESR IV* social studies lessons for high school students incorporate cultural information that correlates with the high school social studies curriculum.

The "Cultural Awareness" resource information is a valuable teaching tool and resource for teachers using the *ESR IV* lesson plans.

THE INTERACTION OF NUTRITION EDUCATION WITH SCHOOL FOOD SERVICE

School food service has a major impact on the eating patterns of many school-age children. The school food service program gives students an opportunity to practice what is learned about eating for good health. Common to all school districts is the large number of children who depend on the School Lunch and School Breakfast Programs for the major nutritional contributions to their daily diet. The *ESR IV: Nutrition Education* curriculum includes lessons at all grade levels that directly correlate with the school food service programs and involve instructional strategies based on balanced meals served in the school cafeteria.

The *ESR IV* lessons that specifically correlate with school food service are identified with a school food service icon. These lessons contain learning activities that involve the cafeteria manager, the school food service menus, and the foods served in the school cafeteria as teaching aids in nutrition.

A cooperative effort of school food service personnel, teachers, and administrators to promote nutrition education can greatly impact the primary goal of improved nutrition for all school-age children.

The National School Lunch Program

Over one hundred years of development, testing, evaluation, and research have resulted in the effective school food service programs available to American school children today. Although school food service programs in this country can be traced back to the 1890s, European countries such as Germany, France, England, Holland, Switzerland, Italy, Sweden, and Norway all had school feeding programs dating back to the 18th century.

The first school feeding programs in the United States began with sporadic food services undertaken by private societies and associations that were interested in child welfare and education. The depression years of the 1930s deepened the concern over hunger and malnourishment among school children. Many states and municipalities adopted legislation to enable schools to serve noonday meals to their children. In 1932 and 1933, the Reconstruction Finance Corporation granted loans to several towns in southwestern Missouri to cover the cost of the labor needed to prepare and serve school lunches. Such federal assistance was expanded to 39 states in 1933 and 1934 under the operations of the Civil Works Administration and the Federal Emergency Relief Administration. In 1935, Congress provided that surplus agricultural commodities be donated for the school lunch program.

During World War II, nearly one-third of the young men turned down for military service were rejected due to nutritional deficiencies. This led to the passage of the National School Lunch Act in 1946 which permanently established school lunch as an integral part of the school system.

Today, the school lunch program is governed by the U.S. Department of Agriculture and State Department of Education regulations as well as local board of education policies.

Lunch Patterns

The goal of the National School Lunch Program is to safeguard the health and well-being of our nation's children. Meals served in the National School Lunch Program (NSLP) should be nutritious and well-balanced. The meal patterns required by the NSLP regulations are designed to provide children with approximately one third of the nutrients they need according to the Recommended Dietary Allowances for their age group.

A school lunch consists of five different food items from four food component groups. The four components include:

- meat/meat alternate
- bread/bread alternate
- vegetable/fruit
- fluid milk

Schools must provide two servings of different vegetables/fruits and one food item from each of the other three component groups. The recommended serving portion of each component can be found in the School Lunch Patterns chart found in the appendices. The important role that school food service plays in the nutritional health of children prompted the development of revised USDA recipes to reflect reduced fat, sugar, and salt in school meals.

The School Breakfast Pattern

The School Breakfast Program began under the Child Nutrition Act of 1966. It was originally a pilot project intended for indigent areas and regions where children had to travel a great distance to school. In 1975, legislation made the School Breakfast Program available to all areas.

School breakfast must include:

- fluid milk
- vegetable/fruit or full strength juice
- two servings of bread/bread alternate or meat/meat alternate or a combination of one bread/bread alternate and one meat/meat alternate

The recommended serving portion of each component can be found in the School Breakfast Pattern chart in the appendices.

Major Nutrients Supplied By School Meals

Children and teenagers require nutrients for growth and maintenance of body size and functions, and school meals are designed to provide these major nutrient contributions. The following nutrients are supplied through foods served daily in school food service programs:

- **Meats or Meat Alternates**
  protein
  iron
  thiamin, riboflavin, niacin, B_6 (pyridoxine)
  B_{12} (cyanocobalamin)
  magnesium
- **Vegetables and Fruits**
  vitamin A (retinol)
  vitamin C (ascorbic acid)
  iron
  magnesium
  carbohydrate
  folate
- **Breads and Bread Alternates**
  B vitamins—thiamin, riboflavin, niacin
  minerals
  carbohydrate
- **Milk**
  calcium
  protein
  vitamin A
  vitamin D
  riboflavin
  magnesium
  phosphorus
  vitamin B12 (cyanocobalamin)

Offer vs. Serve Provision

The "offer vs. serve" provision is the regulation that allows senior high school students to choose fewer than all the food items within the breakfast and lunch pattern. Students in other grades may do this only if approved by the local school food authority. The regulation requires that students be "offered" four components, and students must choose at least three of these items for their meal to be reimbursable. Declining one or two items does not relieve students from paying the full price for the meal. Only the student may determine which items will be chosen or refused.

Adult Meals and Reimbursement

The benefits of the National School Lunch and Breakfast Programs were designed for children. The reimbursement and commodities received by schools are based on the number of lunches and breakfasts served to students. Although commodities are given to school districts, the district must still pay for storage, transportation, and production of the food. No reimbursement or commodities are provided for meals served to adults; therefore, the adult meal must reflect the actual cost of the meal production. Teachers are served food in the same quantities as specified for middle and high school students.

The School Lunch and School Breakfast Programs provide nutritious meals for American school children each day. Community and school district support of nutrition education and school food service programs is critical if children and adolescents are to be provided with the best opportunity for improved health and well-being.

PARENT INVOLVEMENT

Parental involvement is an important link to the overall success of a nutrition education program. There is a direct relationship between parents' involvement in student learning and the achievement of their children. Parents who take an active role in nutrition education can help their children make healthy eating patterns become a lifestyle habit.

Schools can encourage parental involvement in the nutrition education program by sponsoring parent awareness activities. Some suggested activities that can increase parent awareness of the nutrition education program at school include:

- scheduling PTA programs which educate parents about the *ESR IV* program and include tours of the food service facility

- holding an open house at school with a "tasting party" of the foods served in the School Lunch and School Breakfast Programs
- sending a letter to parents from the teacher and/or the student about the nutrition education program
- providing take-home menus of the school food service programs
- recruiting parent volunteers to assist with classroom activities involving food preparation, to serve as guest speakers for food industry careers, or to share knowledge of multicultural foods with students
- motivating parents to encourage their children to eat nutritious snacks that promote good health

It is the responsibility of school administrators, faculty, and staff to be the catalyst for parent involvement in nutrition education.

PROGRAM VISIBILITY

Students must be continually reminded of the role self-responsibility plays in achieving and maintaining optimal health through good nutrition. The use of posters, "Nutrition Month" (March) activities, and nutrition education emphasis throughout other school programs such as athletics, student councils, Future Educators of America, Future Farmers of America, and Future Homemakers of America can serve to reinforce the learning that takes place in the classroom.

The most powerful reinforcement in teaching good nutritional habits involves the administrators, teachers, school nurses, parents, and other adults as role models who make wise food choices for good health each day.

Implementing the ESR IV *Curriculum Guide*

Education for Self-Responsibility IV: Nutrition Education is a curriculum guide that allows teachers to incorporate important nutrition concepts into the existing course of study. Texas teachers, school nurses, administrators, school food service personnel, and other community health professionals provided valuable input into the development of the *ESR IV* curriculum guide. The challenges offered by our changing society have increased the need for nutrition education to become an integral part of basic education so that children and adolescents can develop self-responsibility for their own personal health and wellness.

The *ESR IV* guide contains three volumes of lesson plans and activities for prekindergarten through Grade 12 which are integrated across seven content areas. Within the guide are sample lesson plans and instructional activities that are correlated with Title 19, Chapter 75, Texas Administrative Code (State Board of Education rules for curriculum). The broad range of nutrition topics provides the teacher with opportunities to select and adapt the lessons into planned course work as well as expand and extend the instruction to include other appropriate essential elements.

The *ESR IV* guide was designed for use by the regular classroom teacher and other instructional staff members within the school. Persons other than the school's instructional staff such as dietitians and medical personnel should serve only in the role of guest speakers and resource persons, not as the teacher or instructional leader.

ESR IV GOALS

The goals for the *ESR IV: Nutrition Education* program include:

- to improve the nutritional health of school age youth through nutrition education and to prepare them for a lifetime of healthy dietary habits
- to develop a nutrition education curriculum guide based on behavioral and instructional objectives that are integrated into the content areas of fine arts, health, language arts, mathematics, science, social studies, and vocational education
- to design lesson plans and learning activities that correlate with the School Lunch and School Breakfast Programs. Learning

experiences should motivate students to apply new nutrition knowledge to the choices they make in the school cafeteria
- to increase student awareness and acceptance of the many cultures and cultural differences found in our world. Learning activities should allow students to analyze, compare, classify, categorize, and differentiate the food choices and dietary habits of people with cultural differences. Learning experiences should also integrate the nutritional value and importance of the dietary mainstays of people with various cultural backgrounds

ESR IV OBJECTIVES

The *ESR IV* objectives are written within a conceptual framework that encompasses the following areas:

- Basic Nutrition Principles
- Selecting A Balanced Diet
- Nutritional Needs During the Life Cycle
- Cultural Aspects of Food
- Nutrition Issues

Many behavioral and instructional objectives are written at each grade level to cover all of these areas within the framework. The instructional activities related to these objectives focus on areas of high interest for students and reflect current concerns in nutrition. The *ESR IV* curriculum empowers children and adolescents with the knowledge and skills needed to make wise food choices for the rest of their lives.

SCOPE AND SEQUENCE

The scope and sequence chart allows the user to see at a glance the overall objectives of the *ESR IV* curriculum for prekindergarten through Grade 12. Dots on the chart indicate the appropriate grade level for implementing each of the objectives.

SCOPE AND SEQUENCE

Prekindergarten through Grade Four

Goals:

- Improve the nutritional health of school-age youth through nutrition education and prepare them for a lifetime of healthy dietary habits.
- Motivate students to apply new nutrition knowledge to choices they make in the school cafeteria through School Breakfast and School Lunch Programs.
- Increase student awareness and acceptance of the many cultures and cultural differences in our world. Recognize the importance of the dietary mainstays of people with various cultural backgrounds.

A. Basic Nutrition Principles	**PK**	**K**	**1**	**2**	**3**	**4**
1. Identify food as the source of nutrients needed for growth, energy, and health.	•	•	•	•	•	
2. Identify different foods.	•	•				
3. Name the sources of food.	•	•	•			
4. Identify foods in different forms using all five senses.	•	•	•			
5. Explain the importance of safe handling of food.	•	•	•	•	•	•
6. Define the term *nutrients.*			•	•	•	
7. Explain the functions of nutrients.					•	
8. Describe the relationship of food to energy, growth, and health.						•
9. Identify the functions of nutrients as they relate to growth and health.						•
10. List the functions of dietary fiber in the body.						•
B. Selecting a Nutritionally Balanced Diet						
1. Make wise food choices as part of self-responsibility for health and wellness.	•	•	•	•	•	•
2. Make wise food choices at snack time.	•	•	•	•	•	•
3. Explain the importance of breakfast.	•	•	•	•	•	
4. Develop positive attitudes about food.	•	•				
5. Make wise food choices at mealtime.			•	•		
6. Explore new foods in each food group.			•	•	•	•
7. Classify foods using a food grouping system.				•	•	•
8. Make wise food choices using the daily food guide.					•	•
9. Select nutritionally balanced meals each day.					•	
10. Develop healthy eating habits.						•
11. Analyze daily food choices.						•

SCOPE AND SEQUENCE

Prekindergarten through Grade Four

C. Nutritional Needs During the Life Cycle	**PK**	**K**	**1**	**2**	**3**	**4**
1. Discuss nutritional needs of four, five, and six year olds.	•	•				
2. Discuss nutritional needs of six and seven year olds.			•			
3. Determine the results of unhealthy food habits.			•	•	•	
4. Discuss nutritional needs of seven and eight year olds.				•		
5. Discuss nutritional needs of eight and nine year olds.					•	
6. Discuss nutritional needs of nine and ten year olds.						•
7. Examine the effects of poor dietary habits.						•
D. Cultural Aspects of Food						
1. Investigate the customs of Native-American cultures.		•				
2. Discuss family food preferences.	•	•	•	•	•	•
3. Examine food traditions.	•	•	•	•	•	•
4. Investigate the customs of Mexican-American cultures.			•			
5. Develop an appreciation for foods from different cultural groups.			•	•	•	•
6. Explore food from different cultures.			•			
7. Investigate the customs of African-American cultures.				•		
8. Explore food from different cultures and categorize them using a food grouping system.				•	•	•
9. Analyze the customs of German, Czechoslovakian, and Polish cultures.					•	
10. Analyze the customs of French, Irish, and Italian cultures.						•
E. Nutrition Issues						
1. Explain the role of nutrition and physical fitness in maintaining good health.	•	•	•	•	•	•
2. Identify basic nutrition information on food labels.					•	•
3. Discuss wise consumer food-buying skills.					•	•

SCOPE AND SEQUENCE

Grade Five through Grade Eight

Goals:

- Improve the nutritional health of school-age youth through nutrition education, and prepare them for a lifetime of healthy dietary habits.
- Motivate students to apply new nutrition knowledge to choices they make in the school cafeteria through School Breakfast and School Lunch Programs.
- Increase student awareness and acceptance of the many cultures and cultural differences in our world. Recognize the importance of the dietary mainstays of people with various cultural backgrounds.

A. Basic Nutrition Principles	**5**	**6**	**7**	**8**
1. Describe the relationship of food to energy, growth, and health.	•	•		
2. Identify the functions of nutrients as they relate to growth and health.	•	•		
3. Distinguish between nutrition facts and fallacies.	•	•	•	•
4. List the functions of dietary fiber in the body.	•	•	•	•
5. Recognize the effects of food on health and appearance.	•	•	•	•
6. Explain the importance of safe handling of food.	•	•		
7. Explain the physiological, psychological, and social implications of food.			•	•
8. Identify nutrients, their sources, and their functions.			•	•
9. Compare the nutritive value of foods.			•	•
10. Discuss the Dietary Guidelines for Americans.			•	•
11. Identify the factors involved in preventing food-borne illness.			•	•
B. Selecting a Nutritionally Balanced Diet				
1. Make wise food choices as part of self-responsibility for health and wellness.	•	•	•	•
2. Make wise food choices using the pattern for daily food choices.	•	•		
3. Make wise food choices when eating away from home.	•	•	•	•
4. Make wise food choices at snack time.	•	•	•	•
5. Classify foods using a food grouping system.	•	•		
6. Illustrate ways to avoid excess cholesterol, fat, salt, and sugar.	•	•		
7. Explore the influence of food advertising and the media on food habits.	•	•	•	•
8. Analyze personal food habits.			•	•
9. Determine the effects of peer pressure on food choices.			•	•

SCOPE AND SEQUENCE

Grade Five through Grade Eight

C. Nutritional Needs During the Life Cycle	5	6	7	8
1. Discuss nutritional needs of the pre-adolescent and the adolescent.	•	•		
2. Examine the effects of poor dietary habits.	•	•		
3. Discuss nutritional needs of adolescents.			•	•
4. Discuss ways to achieve a low-fat diet.			•	•
5. Explain the relationship of high intakes of sodium to hypertension.			•	•
6. Examine ways to reduce intake of cholesterol.			•	•
7. List strategies for reducing the amount of sugar in the diet.			•	•
8. Evaluate dietary needs of women during pregnancy and lactation.			•	•
9. Describe the relationship between nutrition and the prevention and treatment of health problems (cancer, common cold, diabetes, heart disease, PKU).			•	•
D. Cultural Aspects of Food				
1. Investigate the customs of Middle Eastern cultures.	•			
2. Investigate the customs of Asian cultures.		•		
3. Discuss family food preferences.	•	•	•	•
4. Examine food traditions.	•	•	•	•
5. Develop an appreciation for foods from different cultural groups.	•	•		
6. Examine the influence of other cultures on our current food habits.	•	•		
7. Analyze the cultural and social aspects of food.	•	•		
8. Explore the development of attitudes toward food.	•	•		
9. Analyze the customs of early Texas settlers.			•	•
10. Develop an understanding of cultural food differences.			•	•
11. Investigate cultural influence on food in Texas.			•	•
E. Nutrition Issues				
1. Explain the role of nutrition and physical fitness in maintaining good health.	•	•	•	•
2. Analyze nutrition information on food labels.	•	•	•	•
3. Identify various eating disorders and their symptoms.	•	•		
4. Distinguish between reliable and unreliable sources of nutrition information.	•	•	•	•
5. Discuss wise consumer food-buying skills.	•	•	•	•
6. Determine the relationship between nutrition and weight control.			•	•
7. Evaluate the claims made by promoters of fad diets.			•	•
8. Describe various eating disorders and their symptoms.			•	•
9. Investigate new developments in food trends.			•	•

SCOPE AND SEQUENCE

Grade Nine through Grade Twelve

Goals:

- Improve the nutritional health of school-age youth through nutrition education, and prepare them for a lifetime of healthy dietary habits.
- Motivate students to apply new nutrition knowledge to choices they make in the school cafeteria through School Breakfast and School Lunch Programs.
- Increase student awareness and acceptance of the many cultures and cultural differences in our world. Recognize the importance of the dietary mainstays of people with various cultural backgrounds.

A. Basic Nutrition Principles	**9**	**10**	**11**	**12**
1. Define the term *nutrition*.	•	•	•	•
2. Explain the physiological, psychological, and social implications of food.	•	•	•	•
3. Identify nutrients, their sources, and their functions.	•	•	•	•
4. Compare the nutritive value of foods.	•	•	•	•
5. Distinguish between nutrition facts and fallacies.	•	•	•	•
6. List the functions of dietary fiber in the body.	•	•	•	•
7. Discuss the Dietary Guidelines for Americans.	•	•	•	•
8. Analyze the relationship between nutrition, health, and wellness.	•	•	•	•
9. Recognize the effects of food on health and appearance.	•	•	•	•
10. Analyze the factors involved in preventing food-borne illness.	•	•	•	•
11. Outline methods for retaining nutrients in foods.	•	•	•	•
B. Selecting a Nutritionally Balanced Diet				
1. Make wise food choices as part of self-responsibility for health and wellness.	•	•	•	•
2. Make wise food choices when eating away from home.	•	•	•	•
3. Make wise food choices at snack time.	•	•	•	•
4. Analyze personal food habits.	•	•	•	•
5. Determine the effects of peer pressure on food choices.	•	•	•	•
6. Explore the influence of food advertising and the media on food habits.	•	•	•	•
7. Examine eating patterns from the past and predict the future.	•	•	•	•

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SCOPE AND SEQUENCE

Grade Nine through Grade Twelve

C. Nutritional Needs During the Life Cycle	9	10	11	12
1. Describe nutritional needs throughout the life cycle.	•	•	•	•
2. Discuss ways to achieve a low-fat diet.	•	•	•	•
3. Explain the relationship of high intakes of sodium to hypertension.	•	•	•	•
4. Examine ways to reduce intake of cholesterol.	•	•	•	•
5. List strategies for reducing the amount of sugar in the diet.	•	•	•	•
6. Evaluate dietary needs of women during pregnancy and lactation.	•	•	•	•
7. Describe the relationship between nutrition and the prevention and treatment of health problems (cancer, common cold, diabetes, heart disease, PKU).	•	•	•	•
D. Cultural Aspects of Food				
1. Discuss family food preferences.	•	•	•	•
2. Examine food traditions at home and around the world.	•	•	•	•
3. Discuss factors affecting the world food supply.	•	•	•	•
E. Nutrition Issues				
1. Explain the role of nutrition and physical fitness in maintaining good health.	•	•	•	•
2. Determine the relationship between nutrition and weight control.	•	•	•	•
3. Evaluate the claims made by promoters of fad diets.	•	•	•	•
4. Analyze the problems and symptoms associated with various eating disorders.	•	•	•	•
5. Analyze nutrition information on food labels.	•	•	•	•
6. Distinguish between reliable and unreliable sources of nutrition information.	•	•	•	•
7. Investigate new developments in food trends.	•	•	•	•
8. Discuss wise consumer food-buying skills.	•	•	•	•
9. Analyze the economics of good nutrition.	•	•	•	•
10. Investigate claims concerning natural and organic foods.	•	•	•	•
11. Assess the role of vitamin and mineral supplements.	•	•	•	•
12. Review current events in the field of nutrition.	•	•	•	•

ORGANIZATION OF ESR IV

ESR IV is divided into three volumes that are designated for prekindergarten - Grade 4, Grades 5 - 8, and Grades 9 - 12. Each volume stands alone for distribution to appropriate school personnel. Each of three volumes are divided into the following sections: (1) introductory materials, (2) sample lessons, and (3) resources.

The introductory materials are at the beginning of each volume and contain useful information for implementing a nutrition education program such as goals, objectives, scope and sequence, and cultural awareness. It also includes an Instructor's Resource Guide for Teaching Nutrition Education which provides teachers with the background nutrition information they need to feel comfortable teaching the *ESR IV* lessons. Sample lesson plans follow the introductory materials in each volume. These lessons are appropriate to each grade level and have corresponding student worksheets, handouts, teacher resource pages, and transparency masters. At the end of each volume is a collection of resources for the teacher to use with the lesson plans.

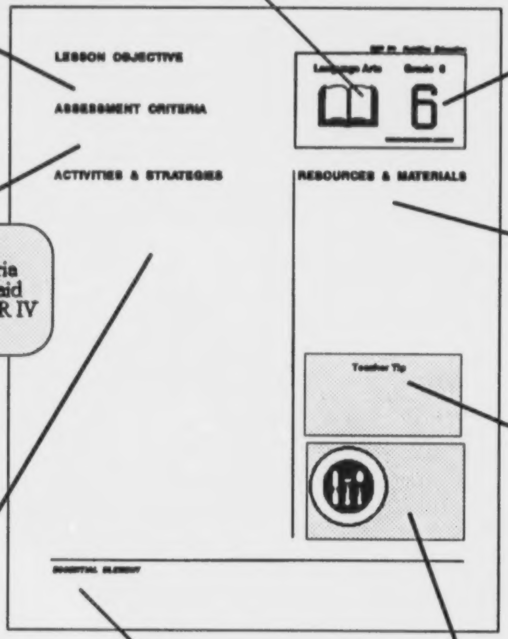
The sample lessons are arranged by grade level beginning with prekindergarten and ending with high school. The suggested subject areas are identified by an icon in the upper right-hand corner of each page. The lessons that contain the school food service icon in the lower right-hand corner are specifically designed to include activities to correlate with the school food service programs.

Icons for the *ESR IV* sample lessons include:

Fine Arts
Health
Language Arts
Mathematics

Science
Social Studies
Vocational Education
School Food Service

USING THE ESR IV LESSONS


LESSON OBJECTIVE
ASSESSMENT CRITERIA
ACTIVITIES & STRATEGIES
Language Arts
Grade 6
6
RESOURCES & MATERIALS
Teacher Tip
ESSENTIAL ELEMENT

An icon indicates the subject of the lesson.

This number indicates a suggested grade level for the lesson. Grades 9 - 12 are consolidated and labeled HS because classes often consist of students from different grades.

One or more relevant objectives are chosen from the BSR IV Scope and Sequence.

One or more assessment criteria are provided to aid in evaluating BSR IV objectives.

Selected resources and materials are listed along with materials needed to implement the lesson. Local resources may be added by the BSR IV user.

The shaded Teacher Tip box provides helpful hints or additional information on implementing the lessons.

Suggested activities are briefly described.

Specific essential elements correspond to identified subject areas.

The shaded school food service box provides hints for integrating school food service programs into the nutrition lesson.

RESOURCES

Appendices at the end of each volume of the curriculum guide include:

- *Suggested Teacher Resources* containing books, government documents, pamphlets, periodicals, and audiovisuals
- *Bibliography* of nutrition education publications
- *A Pattern for Daily Food Choices* consisting of a daily food guide chart based on the USDA 's "Dietary Guidelines for Americans"
- *Recommended Dietary Allowances* established by the National Food and Nutrition Board of the National Academy of Sciences
- *Food Composition Table* consisting of a list of the nutrient composition of selected food items
- *Dietary Guidelines for Americans* adapted from "Nutrition and Your Health: Dietary Guidelines for Americans," U.S.Department of Agriculture and U.S. Department of Health and Human Services
- *Glossary of Terms*
- *Suggested Instructional Strategies*
- *Health Hotline of Agencies and Organizations* containing a list of agencies and organizations that provide nutrition education information and materials

TRAINING

An important aspect of any curriculum implementation is the training of those who will be involved as teachers and leaders of the nutrition education program. Due to increased public interest in nutrition, much of the media attention given to the subject has been misinformation or fallacy; therefore, it is imperative that those educators who use the *ESR IV: Nutrition Education* curriculum need to have accurate nutrition information. The following school personnel can be trained to use or train others to use the *ESR IV* nutrition education curriculum:

- school board members
- administrators (including athletic directors)
- faculty members (including all teachers and coaches)
- school nurses, counselors, and librarians
- school food service personnel

The training program for all school personnel should address the following issues:

- the importance of providing factual nutrition information based on scientific and clinical research

- the school's role in implementing nutrition education as a part of each child's basic education
- the effects of poor nutritional habits on school performance
- the role of school food service programs in the total nutrition education program
- the importance of community support and parental involvement

The teachers and instructional staff members responsible for instructing nutrition education should receive additional training in the following areas:

- basic nutrition principles
- nutrition education as an integral part of each child's basic education
- explanation of an integrated curriculum
- philosophical framework of *ESR IV* (Behavioral, emotional, intellectual, and physical growth depends on healthy dietary habits.)
- team teaching the nutrition education curriculum
- organization of the curriculum guide including the purpose of combining information, skills, and support
- specific instructions on how teachers can use the curriculum guide including illustrations of a variety of instructional techniques
- skills in lesson closure to reinforce the message that eating for good health must become a lifestyle habit
- descriptions of a variety of evaluation techniques for gauging the effectiveness of instruction

RED FLAGS

It is important that the teacher acknowledge the differences in individuals and their health needs to help reduce self-consciousness during the nutrition lessons. This communication reassures each student that he or she is a unique person; however, nutrition education specialists have identified some sensitive issues and actions that should be noted when teaching nutrition education. Issues or actions that should be avoided are called red flags and include:

Making comments about personal likes and dislikes in reference to foods
Children see teachers and other adults as role models and tend to copy their behavior. Set a good example for the students by making wise food choices.

Classifying foods as "good" or "bad"
Children will develop healthy attitudes about eating if they are taught that all foods can fit into a healthy diet when eaten in moderation. Eating can be a pleasurable experience for everyone.

Engaging in teacher self-disclosure
Teachers and students should not be encouraged to share personal stories relating to weight loss programs, fad diets, eating disorders, etc. Discussions should center around factual nutrition information and developing valuable life skills.

Discussing prescribed diets and personal food preferences
Children and adults consider their food habits to be very personal, and self-esteem can be easily damaged. Discussions of prescribed diets may encourage experimentation.

Making negative references to meals eaten in the school cafeteria
Mealtime is a significant part of every person's day. Allow children to view meals eaten at school as positive, social experiences.

Handling disciplinary problems during mealtime in the school cafeteria
It is important to remove the child to another location for disciplinary action. This will benefit the child causing the problems as well as the other children who develop anxiety from witnessing the disciplinary action. Anxiety during mealtime causes loss of appetite and stomach distress.

Making comments that reinforce the unrealistic societal demand for perfect people with perfect bodies as seen through the media
It is imperative that positive messages of respect and value for each individual's unique qualities and talent replace negative messages produced in television, film, radio, music, newspapers, and magazines.

Encouraging the use of vitamin and mineral supplements
Young people who are active in athletic programs are vulnerable to advertising promises that certain supplements and protein powders will improve athletic performance and increase stamina and strength. Physically active children and teens need to increase their intake of nutrients only slightly, and these needs can easily be met by the addition of several nutritious snacks during the day. Young athletes need a high carbohydrate diet which includes plenty of fruits,

vegetables, grains, and starches as well as adequate calories and fluids. Megadoses of vitamin and mineral supplements are potentially harmful and can cause serious side effects.

RECOMMENDATIONS FOR USING ESR IV

When planning the implementation of *ESR IV* for the classroom, the first step is to familiarize yourself with the philosophy pertaining to nutrition education in the curriculum guide and in district and campus-level plans.

The recommended procedure for using *ESR IV* is as follows:

- Obtain a copy of the "Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of each volume of *ESR IV*. **It is imperative that each teacher have a personal copy of the "Instructor's Resource Guide for Teaching Nutrition Education."** Many of the lessons depend on this resource as a teaching aid.
- Read through the introductory section to gain a broad understanding of Texas' overall effort to improve the nutritional health of Texas school children.
- Scan the sample lessons and resources to familiarize yourself with lesson content.
- Identify any personal weaknesses in preparation for teaching nutrition education and initiate plans to strengthen skills and knowledge in those areas.
- Develop a plan of implementation by consulting with teachers of all grade levels and building grade-level files. Such plans will contribute to the continuity of students' experiences from grade to grade.
- Plan your lessons. Based on the characteristics of your class, the materials available to you, and your personal judgment, select the lessons and activities you will teach.
- Understand that the lessons may have one or more activities which may take varying amounts of time. All activities on a sample lesson page do not need to be completed in one lesson period.
- Arrange for any additional materials needed to conduct the lessons.
- Teach nutrition education as an integral part of your regular class.
- Involve the school librarian in screening and selecting materials.

USING OTHER CURRICULAR MATERIALS

ESR IV is a nutrition education curriculum intended to supplement and enhance the total education of Texas school-age children. The nutrition information found in *ESR IV* is based on current health research. It is important that the nutrition facts presented to students throughout the curriculum be consistent and correct. Some criteria to consider when selecting additional nutrition education curricular materials include:

- Do the materials clearly supplement the existing curriculum? New curriculum materials should integrate easily into the overall academic program.

- Do the materials begin with early childhood and carry through to high school? In order to establish healthy eating habits and modify unhealthy current eating practices, nutrition education must begin early in a child's life and continue through all stages of the life cycle.

- Do the materials fit into the comprehensive health program? A comprehensive health program includes health education in the classroom, health services provided by the school nurse, and a healthy school environment.

- Are the materials culturally sensitive? Public schools serve students from diverse cultures. The variety of student backgrounds and traditions in the classroom must be considered.

- Are the materials founded on valid research? Consider using only materials and activities that are based on current nutrition research.

- Do the materials have current, state-of-the-art information? Out-of-date nutrition information resources and materials in the classroom and the library must not be used and should be removed.

EVALUATION

Evaluation is an essential part of any teaching and learning program. The educational process provides students with opportunities to master content, develop thinking skills, master skills needed to perform tasks, and change attitudes and behaviors based on new learning. In comparison, the evaluation process provides educators with opportunities to:

- confirm the hypotheses that served as the basis for the program plans
- examine strengths and weaknesses of the program
- draw conclusions based on the program's strengths and weaknesses
- analyze data that will substantiate future decisions concerning improvements to the program
- make decisions concerning recommended revisions

The ongoing evaluation process should occur at all levels from the classroom to the school campus, the school district, and the state agency. Evaluation involves asking critical questions that will supply the data necessary to determine the effectiveness of the learning. There are several steps involved in the evaluation process which include:

1) formulating clearly defined instructional objectives
2) gathering of evidence that acknowledges the achievement of the stated objectives
3) analyzing and interpreting the evidence
4) assessing the strengths and weaknesses of the students
5) proposing modifications and improvements to the total program

Evaluation of a program such as *ESR IV* may differ from the evaluation of other curriculums that involve mainly cognitive and psychomotor learning. The *ESR IV* goals "to improve the nutritional health of school age youth through nutrition education and to prepare them for a lifetime of healthy dietary habits" involve the affective outcomes of changed attitudes and behaviors. Significant emphasis must be placed on the role that values and attitudes play concerning food, food habits, health, and wellness. Evaluation methods such as anonymous self-reporting instruments and observation techniques may provide a truer assessment of changed behaviors and attitudes than written tests or other more traditional evaluation tools.

Key questions to be addressed in the evaluation of the *ESR IV: Nutrition Education* curriculum include:

- What percentage of the intended student audience is being reached?
- How effective is the program in meeting the identified goals and objectives?
- Is the program integrity maintained?
- What improvements could be made to ensure that students obtain the maximum benefit from the program?
- Are teachers integrating the lessons into the subject matter areas as designed?

Questions that assess changed student behaviors and attitudes include:

- Do students understand the relationship of good nutrition to health and wellness?
- Do students recognize that there are not "junk foods", but only "junk diets?"
- Have students developed skills to make wise food choices and to develop healthy dietary habits?
- Do students have a clear understanding of "making wise food choices?"
- Are students able to analyze their own personal eating habits?
- Can students relate how nutritional needs change throughout all stages of the life cycle?
- Do students have an increased awareness of cultural differences and cultural dietary practices?
- Have students learned to cope with stress from home, school, and work in ways other than binge eating?
- Can students explain why there is no "miracle food?"
- Are students able to discuss the relationship between a healthy self-image and their food choices?
- Do students realize that exercise and sufficient rest must be combined with nutritional dietary practices to improve the quality of life at any age?

Evaluation is a comprehensive, cooperative, and continuous process. It is comprehensive when all learning and all objectives are evaluated regardless of their level of difficulty. The cooperative process involves the combined efforts of teachers, administrators, and other personnel toward evaluation. This "cooperative spirit" allows for a true evaluation of the program's effectiveness. Finally, evaluation must be a continuous process because inevitable change and revision bring about the need for new evaluation. Continual evaluation and improvement of any program is the key to its success.

Modifying ESR IV for Special Populations

The nutritional health of school-age children of all races and socioeconomic levels is an ongoing concern for educators and health professionals. All students who are capable of learning and understanding should be taught the skills necessary to develop a lifestyle of healthy dietary habits. Nutrition education concepts, skills, and objectives should be mastered just as other educational concepts and objectives are mastered.

Special populations include students who:
- have handicaps
- have academic difficulty
- are bilingual
- possess limited English proficiency
- are from migrant families
- are gifted and talented

Despite their differences, these students have a common need for alternative approaches to instruction in the classroom because regular classroom teaching strategies are generally inadequate for them.

A major goal of any education program is to provide all students with opportunities to advance to the full extent of their abilities. The state-mandated curriculum now ensures a well-balanced single curriculum of instruction for all students regardless of special need or condition. Instruction for students with special needs includes the same essential elements as instruction given to general education students. Special program personnel and regular instructional personnel are jointly responsible for the cooperative yet modified delivery of effective instruction to students with special needs.

SPECIAL EDUCATION

Handicapped students may be able to fulfill the same curriculum requirements as their nonhandicapped peers; however, they may require modified content, testing methods, instructional methods, materials, pacing, and other attention regarding nutrition education.

Mainstreamed special education students may not have any background health information if they have not had classes such as health, physical education, and science which include essential elements related to health and nutrition. Class schedules of special education students and their Individual Education Plans (IEP) should be monitored to assure that these students are receiving adequate nutrition education.

Educators should be sensitive to the needs of handicapped students who rely on medicines and life support mechanisms. These students must not be made to feel that something is wrong with them because of their dependence on the medications or machines. Many handicapped students also have special dietary needs which should be recognized with care and sensitivity.

It is important to modify methods of presenting *ESR IV* materials to students with special needs. The teacher can select activities that make use of posters, charts, drawings, and flannelboard designs instead of teaching activities that require reading skills. Instruction can be delivered to hearing impaired students through sign language and to the severely visually handicapped through Braille. If students have handicaps that impair judgment, a direct instructional approach may be best.

Complex lessons with special vocabulary, complicated language patterns, or difficult illustrations should be avoided. Other possible modifications include:

- supply supportive instruction and reinforcement while using the same materials as for nonhandicapped students
- provide special instructional materials or media to reinforce concepts presented in nonhandicapped classes
- furnish adaptive methods to assess a student's knowledge of the subject area or essential elements in the standard courses
- summarize key points before starting an assignment
- match the content and delivery with the developmental level of the learner
- give instructions through several channels such as written and oral demonstration
- repeat instructions; provide more detailed directions
- change the pace of presentation
- ask leading questions as work progresses
- use progress charts and informal individual feedback interviews
- assign oral presentations, reports, and projects
- allow more time for assignments
- establish a buddy system within the classroom to provide assistance
- use peer tutors to assist handicapped students

- use group assignments
- use tape-recorded material so that students can listen and follow along in the written text; record instructions and assignments

COMPENSATORY EDUCATION

Compensatory instruction is targeted for students who are having academic difficulty in English language arts, mathematics, science, and social studies. Other students who may require remedial or compensatory instruction include migrant students, students whose primary language is not English, and prekindergarten or kindergarten children who have been identified as having developmental needs.

Compensatory instruction should extend and reinforce the regular program of instruction. Instruction in nutrition education for students in this category should be:

- based on each student's functional instructional level
- modified as necessary to accommodate methodologies, pacing, and materials
- designed to include the essential elements

Some students in this category may need assistance with a single concept or skill while others may be functioning significantly below the age or grade level of their peers and therefore require more attention. Teachers of students with special needs should:

- identify specific skill needs to ensure that instruction is directed toward specific skill and concept deficits
- identify specific learning modalities and styles
- identify alternate instructional strategies
- compare appropriateness of the material and activities with the student's reading and maturity level

Special remedial and compensatory alternatives are available such as tutorials, special teachers to provide additional time on task, reading improvement courses, locally developed study skills courses, coaching, summer school, and counseling. The regular teacher and any other teacher who provides remedial or compensatory instruction in addition to regular classroom instruction should plan and coordinate instructional activities using a team approach. Instructional personnel should also have training in teaching nutrition education. Regular instructional personnel and special personnel involved in the compensatory education program should work together to apply the same principles in nutrition instruction as in other teaching. To be effective, the educators will:

- determine each student's instructional level and identify specific skill needs
- jointly design and implement lesson plans
- adapt or modify instruction based on continuous assessment of student progress
- use small group instruction for students with the same skill needs
- limit independent activities to shorter periods of time
- ensure close monitoring of practice activities to prevent repetition of misunderstandings
- use concrete activities to teach skills and concepts
- use cross-age tutors, adult tutors, and peer tutors for one-on-one reinforcement
- arrange for adult coaches who can serve as mentors

BILINGUAL EDUCATION

To ensure that the goals of *ESR IV* are met for limited English proficient (LEP) students, administrators, and teachers must design a program equivalent to the program provided for native speakers. LEP students must have the opportunity to learn and use materials that develop expanded meanings of language, build vocabulary, and teach word recognition and comprehension techniques. To prevent feelings of isolation and low self-esteem that may result from a lack of proficiency in English, students should also be given frequent opportunities to participate in nutrition education activities provided at the school and in the community. These activities can lead the students to experience success and consequently improve their self-esteem and physical health and well-being.

Teachers who are certified as bilingual or English as a Second Language (ESL) instructors can team with personnel on emergency teaching permits to develop supplementary programs for LEP students. Parent volunteers and paraprofessionals can work with regular instructional personnel cooperatively to deliver the needed programs.

While modification of the instructional program involves changing the language in which the content is conveyed, the scope of the curriculum should remain the same. In an ESL program, the sequence in which the essential elements are presented can be modified to accommodate students' progress in acquiring English language skills. Emphasis on oral and visual stimuli aids students in grasping the concepts that English-speaking students develop by writing.

More specifically, the teacher can help students build card files and glossaries on nutrition vocabulary, present the same information through a variety of different charts and visuals, encourage students to underline key words or important facts in their written assignments, and encourage categorizing of nutrition words and information into meaningful groups. Teachers can also pair students for team learning.

In an ESL program, pacing modifications should be based on vocabulary concept development while in a bilingual program, dual language instruction enables teachers to use a process approach to the content area. Additionally, teachers can explain special vocabulary terms in the students' native language; write instructions using short, simple sentences; limit the number of problems that must be worked; record activities for independent listening assignments; de-emphasize speed and emphasize accuracy of work; ask open-ended questions to allow practice in thinking and speaking; and assign homework tasks that require a short reading time. Teachers also need to remember that the students' parents or families may not speak English or have few materials at home to support learning activities.

It is important that student materials, whether they are state-adopted textbooks in Spanish, teacher-made lessons, or district-developed aids to instruction, be modified to meet the students' academic needs. The teacher can modify student materials and activities by:

- providing pictures to illustrate new words
- offering a variety of reference materials at the students' instructional levels for independent work
- using a variety of activities from lower grade levels such as games to be played by pairs of student or small groups
- maintaining a library of supplementary books and workbooks written in simple English
- using diagrams and drawings to identify concepts and relationships
- providing films, records, filmstrips, and videotapes to be used independently or in small groups

MIGRANT STUDENTS

Effective teaching of migrant students is a challenge for many districts and individual schools. Thorough, careful analysis and diagnosis are needed to determine if migrant needs are due to lack of experience, lack of time on task, or need for remediation. An accurate assessment is essential in order to adapt the content of the curriculum, methods of instruction, and the direction of nutrition education to meet migrant students' needs.

Migrant students are often limited in English proficiency, require compensatory and remedial assistance, or need enrichment activities to be challenged adequately. Sometimes, these students also attend school part-time, from six to seven months, or they may attend school for the full year. In either situation, gaps in their education are usually apparent.

Teachers can extract vital educational information concerning individual migrant students from the Migrant Student Record Transfer System (MSRTS) which reports credits earned in courses and partial work completed. If migrant counselors are available, they can assist teachers in planning instructional programs for migrant students. Continuity of instruction and provision of intensive remediation are two important ways in which teachers can provide an opportunity for migrant students to learn the essential elements. School districts can share information by using a checklist indicating which essential elements have been taught, which need to be reinforced, and which require further instruction.

The following list suggests ways that teachers can modify *ESR IV* for migrant students:

- Assess the students' instructional levels through informal testing.
- Select and highlight the most important activities that help explain and give vocabulary to the essential elements.
- Prepare brief outlines of units to be studied and highlight important topics related to nutrition education.
- Build independent units for elementary students that can be rearranged as needed to cover areas that the students have not been taught.
- Establish a buddy system for recording and reporting data and for completing assignments.
- Provide migrant students with oral tests and/or tape-recorded lessons when appropriate.

- Use a group language experience approach for oral language development.
- Allow the students to bring their own culture into the classroom by incorporating it into the content of the course.
- Capitalize on students' experiences of travel, work, and different family structures.
- Provide mentors for gifted migrant students who show ability and interest in a certain field, especially in nutrition and health-related careers.
- Assign homework and course projects that are relevant to the migrant student.
- Allow opportunities for independent work that can be completed through prepared independent units of study.
- Use tutors to supplement instruction; keep student/teacher, aide, or peer ratio low.
- Establish extra classes in the evening, on weekends, and during the summer.
- Provide computer-assisted instruction for remedial and enrichment purposes.
- Assess facets of the students' migrant experience that can help them grasp and master certain essential elements.
- Modify textbook and other reading passages to an appropriate reading level.
- Make use of high-interest, low-reading level materials.

Educators may also use suggestions from the Compensatory Education, Bilingual Education, and Gifted and Talented Education sections of this curriculum guide to plan an effective instructional program for migrant students.

GIFTED AND TALENTED STUDENTS

An understanding of the needs and characteristics of gifted and talented students is the first step in adapting the *ESR IV* curriculum guide for these students. Programs for gifted students modify or differentiate the curriculum used in the standard classroom regardless of content area. This does not imply that the curriculum is different, but rather that it accelerates, expands, or enriches the regular curriculum to suit the needs of the gifted learner. This is in keeping with Title 19, Chapter 75 of the Texas Administrative Code, which suggests that districts use these techniques when modifying the curriculum for gifted students.

Differentiation of the curriculum takes place in three areas. A differentiated curriculum contains in-depth content studies which are joined with sophisticated process skill development to result in sophisticated product development.

Differentiation of the nutrition education curriculum can be effective in every subject or course area and at all grade levels. Gifted students should first be involved at the knowledge level. The importance of establishing a lifetime of healthy dietary habits can be taught through direct instruction and through films, books, pamphlets, periodicals, and resource individuals. At the appropriate time, administrators and teachers can accelerate, expand, and enrich the program by including activities that encourage students to:

- apply critical thinking and analysis skills to writing questions related to nutrition for a unit of study using Bloom's taxonomy
- sharpen creative thinking and communication skills by creating plays, poems, ads, slogans, posters, stories, and books for nutrition education strategies and activities
- apply knowledge of nutrition education by preparing brainteasers and puzzles to be used in a puzzle book for other students
- plan and present an assembly about nutrition using songs, skits, poems, and choral readings that they have developed
- increase research skills by having students choose a topic related to nutrition, state a thesis, conduct research, and then present findings in the form of a creative display or product
- develop leadership skills by planning and producing a nutrition education campaign or assembly for preschool or elementary children
- develop an independent study project focusing on a topic related to nutrition

Other modified or differentiated activities for gifted students can include:

- designing and setting up a learning center related to nutrition education
- planning, scheduling, and providing follow-up activities for an in-class presentation by a dietitian, nutrition education specialist, nurse, or other resource persons
- publishing a school newsletter on the value of good nutrition

MULTICULTURAL SENSITIVITY

Without a doubt, Texans live in a culturally diverse society. Multicultural education can help prepare young people to be sensitive to multicultural attitudes, beliefs, and interests that are present at home, school, and in the community. Therefore, it is important that all educators in the state, and particularly those involved in nutrition education, need to be sensitive to the precepts of multicultural education.

Through formal and informal multicultural approaches, nutrition educators can develop and promote the kind of multicultural sensitivity that needs to become an integral part of every teacher's repertoire of skills. The basis for this approach is provided by the State Board of Education rules. Title 19, Part II of the Texas Administrative Code of Statutory Citations, Chapter 97, Subchapter B, Principal V (97-25), Standard 3 states, "The district's curriculum is adapted appropriately to meet the needs of all students, including those in special education and special populations."

In addition to rules that point toward multicultural education and sensitivity, an important humane consideration is obvious. We can better reach students when we teach the whole child and to teach the whole child, we need to understand, accept, and incorporate cultural differences into the classroom setting.

Students of many cultures in large urban school districts and smaller rural schools throughout Texas will respond well to teaching techniques that give consideration to their differences in backgrounds and experiences. This approach is especially appropriate in nutrition education because food availability as well as cultural food traditions vary greatly from student to student.

Inservice and training are useful in increasing teacher awareness and sensitivity, but simply being cognizant of one's classroom and school environment can do a great deal to promote understanding of multicultural issues.

The following are a few specific strategies and suggestions that encourage multicultural sensitivity:*

- Realize that students are influenced greatly by personal relationships and praise or disapproval.
- Teach to oral language strengths in both speaking and listening.
- Utilize many students' desire to work cooperatively.
- Provide whole group and tutorial instruction.

- Be a willing learner, a student of their culture.
- Form individual relationships with students. Learn to spell and pronounce their names correctly.
- Realize that once you have been accepted, you will become an active role model.
- Do everything possible to enhance self-concept.
- Expect your students to succeed; believe they are capable of achievement.
- Do not think of multicultural education as remedial or compensatory.
- Do not make learning competitive.
- Evaluate holistically in terms of individual growth.

*These and other strategies are listed in "Toward a Rationale for a Supervisory Model of Instruction in Multi-Cultural Student Populations or Sweathogs Won't Bite" by Catherine A. Baker. (ERIC Document No. 246005)

Instructor's Resource Guide for Teaching Nutrition Education

The main goal of nutrition education is to provide students with the knowledge and skills needed to make wise food choices throughout their lifetimes. In order to accomplish this, nutrition education must include the cognitive, affective, and psychomotor domains of learning. Positive change in dietary habits and in the ability to make wise food choices can be accomplished when students are given opportunities that enable them to:

- Recall and relate basic nutrition information. (Cognitive)
- Choose to adopt this information to their own personal value system. (Affective)
- Develop and practice skills that are needed to accomplish nutrition education goals. (Psychomotor)

BASIC NUTRITION PRINCIPLES

Nutrition is the foundation for good health and results in the effect of food on the body. The statement, "You are what you eat," is certainly true from the standpoint of nutrition and good health. The study of nutrition is a science that involves the relationship of growth, development, and overall health to the intake of nutrients. People need to have basic knowledge of nutrition so they can separate fact from fallacy in health and nutrition claims.

Implications of Food: Physiological, Psychological, Social

The past decade has seen Americans take a sincere interest and dedication to improved individual health and wellness. Consumers are concerned with the latest scientific findings on health issues and nutrition-related topics.

Physiological Implications.

Improved nutritional knowledge and a better understanding of the relationship of nutrition to health and prevention of disease has had a significant impact on the increased human life span in the past 100 years. One hundred years ago, the average human life span was 40 years. Today, the average American has a life expectancy of 75 years.

Food is the way in which the body obtains nourishment. The nutrients that the body gets from food not only enable the body to work, but also supply it with building blocks for growth and development of bones and tissue, supply energy for work and play, and provide other nutrients that enable the body to perform all of its important functions.

Besides the nutritional importance of eating, there are other physiological factors involved. The four senses that influence the appetite and the satisfaction gained from eating are sight, smell, taste and touch. These factors are directly related to the feelings of hunger and satiety that occur before and after eating.

Psychological Implications.

Along with the body's demanding need for nourishment, food has other roles as well. For most people, food has an emotional value that is influenced by intrinsic and extrinsic factors.

In infancy, food fulfills the need for affection, comfort, and security. For all humans, food fulfills the need for security and relieves the tensions and anxieties brought on by hunger. Many people use food in an attempt to satisfy their feelings of anxiety, boredom, or loneliness. All of these factors are intrinsic factors that occur in response to emotions. There are also many extrinsic, or external, factors that psychologically influence food habits. Advertising, movie theaters, spectator sports, and television programming send signals to people to eat. Thus, certain food habits are established as a result of these influences. People are also influenced by the food choices made by family and friends. Food is often used to boost self-esteem in the presence of others, or as a means to feel included with a certain group.

Social Implications.

Foods, as well as eating patterns, have many social implications. Not only do people associate food and mealtime with social gatherings of family and friends, but they also associate certain foods, occasions, locations, and people with eating. Many people have childhood recollections of going to a family member's home, such as grandparent's, for a special meal. Likewise, other people associate food with times of celebration and crisis. In cultures all over the world, people prepare and serve food as part of most social gatherings.

It is important that nutrition educators consider all of these factors when helping children and adolescents acquire good dietary habits that will carry over into their adult lives.

The Nutrients

Nutrients are life-sustaining chemical substances that nourish and promote the growth of the human body. No one food contains all of the nutrients necessary for the body to function effectively; therefore, a balanced diet that incorporates appropriate amounts of the six essential nutrients, as well as recommended servings from the food groups, is necessary. Individuals should choose foods of high nutrient density rather than foods with empty calories. Foods that are nutrient dense are foods that are excellent sources of essential nutrients with few, if any, empty calories. ***Empty calorie foods*** refer to foods that provide calories or energy but little or no nutritive value. The six essential nutrients are:

- protein
- carbohydrates
- vitamins
- minerals
- fats
- water

The ***RDA*** is the Recommended Dietary Allowances for Americans. The RDA serves as a guideline for determining the amounts of nutrients a specific person needs each day. It gives the specific recommended daily nutrient needs for a person according to age and gender. The RDA is established by the National Food and Nutrition Board of the National Academy of Sciences. The ***U.S. RDA*** are the Recommended Daily Allowances developed by the Food and Drug Administration for use on food labels. The U.S. RDA is a standard that everyone can use to approximate daily nutrient needs.

Protein.

Protein is the main component of every cell in the human body. Without protein, the human body would not be able to survive. Protein performs three very important functions. The body uses protein for:

- Growth and repair of new and damaged tissues.
- Regulating all body functions, and transporting other nutrients and oxygen throughout the body.
- Supplying energy when adequate amounts are not supplied by carbohydrates and fats.

Protein is comprised of compounds called amino acids. Amino acids are often referred to as the building blocks of protein. There are 22 different amino acids. Thirteen of these amino acids are manufactured in the body, and the remaining nine amino acids must be supplied by the diet. These nine amino acids are often referred to as essential amino acids because it is essential that they be furnished by the diet. The body cannot function without these nine essential amino acids. People in less developed countries suffer from many diet-related diseases and other health problems because of the shortage of protein foods.

Protein foods that supply all nine of the essential amino acids are called ***complete proteins***. Foods that supply only some of the nine essential amino acids are called ***incomplete proteins***. Two incomplete protein foods can be eaten together to form a complete protein source. Most generally, animal proteins are complete protein sources and plant proteins are incomplete protein sources. However, animal proteins also provide more fat and calories than plant proteins. It is a wise dietary practice to consume combinations of plant proteins to fulfill some of the body's need for complete proteins. Some examples of combining incomplete proteins to form complete proteins are:

- Legumes (dried beans, lentils, split peas) and rice
- Pinto beans and corn tortillas
- Peanut butter sandwich (Peanuts are a legume.)

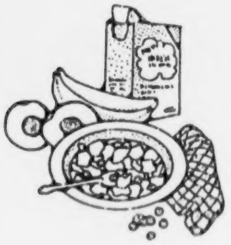
Baked Beans

Another way to form complete proteins is to combine a small amount of animal protein with an incomplete protein source. Some examples include:

- Bean soup with small amounts of chopped ham
- Macaroni and cheese
- Cereal and low-fat or skim milk
- Baked potato with cottage cheese
- Spaghetti with tomato sauce and a small amount of meat

The average American adult eats twice as much protein as is needed. It is recommended that 10-15% of calories come from protein for most children and adults. Protein needs increase during times of growth, such as childhood, adolescence, pregnancy, and lactation. People should consult the Recommended Dietary Allowances (RDA) for gender and age group guidelines for protein requirements.

Carbohydrates.

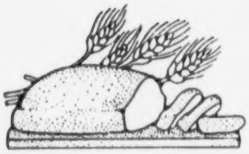


Carbohydrates are nutrients that supply energy for body functions. The other energy sources are proteins and fats. Fifty to fifty-five percent of calories should come from complex carbohydrates. Carbohydrates are broken down in the body into sugars, starches, and fiber. The sugars are known as simple carbohydrates, and the starches and fibers are known as complex carbohydrates. Carbohydrates perform three important functions in the body. The body uses carbohydrates to:

- supply energy
- supply fiber
- aid in the digestion of fats

- ***Monosaccharides*** are the simplest form of carbohydrates. The monosaccharides are glucose, galactose, and fructose. Sugars and starches are broken down in the body into the simple sugar glucose. ***Glucose*** is the major sugar found in the bloodstream and supplies energy for the body. Some body tissues, such as red blood cells and parts of the brain, are able to get energy only from glucose. ***Fructose*** is found in honey and fruits and is known as the sweetest of the sugars. ***Galactose*** is not found in nature, but is one of the two monosaccharides available after the breakdown of lactose (milk sugar).

- ***Disaccharides*** are formed when two glucose molecules are joined together. They are broken down into monosaccharides during digestion. The disaccharides are sucrose, maltose, and lactose. ***Sucrose*** is found in white refined table sugar, brown sugar, confectioner's sugar, cane sugar, beet sugar, molasses, and maple syrup. ***Maltose*** is malt sugar which is found in sprouting cereal grains. ***Lactose*** is milk sugar and is found only in milk.



- ***Polysaccharides*** are the complex carbohydrates. They include starch, cellulose, and glycogen. ***Starch*** is the most abundant polysaccharide. Starch can be found in roots, legumes, grains, and vegetables, but must be broken down into glucose by the body before it can be utilized. ***Cellulose*** is the fibrous material found in plants and is commonly referred to as fiber or roughage. Cellulose cannot be digested by humans. Sources of cellulose include vegetables, fruits, and whole grain cereals. Glycogen, also known as animal starch, is the storage form of carbohydrates found in the liver and muscles. Glycogen in the liver is easily broken down into blood glucose, and muscle glycogen supplies glucose for muscle use. This is especially important during periods of intense exercise.

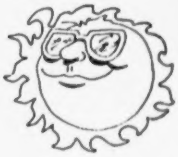
Vitamins.

Vitamins are organic compounds necessary for normal growth, maintenance of health, and reproduction. Vitamins help the body convert carbohydrates and fat into energy and assist in the formation of bones and tissues. Vitamins are essential for maintaining good health as the body cannot survive without them.

Vitamins are either fat soluble or water soluble. ***Fat-soluble vitamins*** cannot be dissolved in water, so they are stored in body fat until they are transported to the cells by the blood. ***Water-soluble vitamins*** are easily dissolved by water and therefore are not stored in the body. Water-soluble vitamins must be replenished daily.

Vitamins A, D, E, and K are the fat-soluble vitamins. The functions and sources of each of the fat-soluble vitamins include the following :

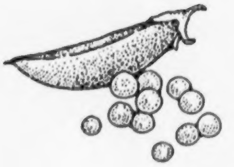
- ***Vitamin A*** (retinol) is responsible for night and color vision, growth of bones and teeth, and production of healthy skin. Sources of vitamin A include dark green and dark yellow vegetables, fruits, egg yolks, whole milk, liver, butter, and fish oils.

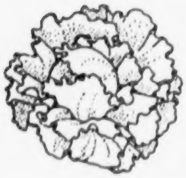


- ***Vitamin D*** (calciferol) is important for the normal growth and development of bones and teeth , and it aids in the absorption and utilization of calcium and phosphorus. Sources include egg yolks, liver, fish liver oils, and fortified milk. The primary source of vitamin D is the sun. However, excessive exposure to the sun puts a person at risk for certain types of skin cancer.

- ***Vitamin E*** (alpha tocopherol) protects cells from oxidation. ***Oxidation*** is a chemical change that occurs as a result of exposure to oxygen. When blood cells or tissue cells are exposed to oxygen, the resulting chemical change known as oxidation causes a weakening of the cells walls and thus damages the tissues. Vitamin E is most effective in protecting the red blood cells in the lungs and the cells in the lung tissue because of their continuous exposure to oxygen. Oxidation also occurs when foods are exposed to oxygen and results in a loss of vitamins, as well as food spoilage. Sources of vitamin E include vegetable oils, wheat germ, whole-grain bread and cereal products, liver, fish liver oils, and green leafy vegetables.

- ***Vitamin K*** (phylloquinone and menaquinone) is necessary for blood clotting. Sources include green leafy vegetables, broccoli, peas, liver, cheese, and eggs.





The water-soluble vitamins include the eight B vitamins and vitamin C. The functions of each of the water-soluble vitamins and sources of each include:

- ***Thiamin*** (vitamin B_1) helps break down carbohydrates in the body and helps the body release energy from food. It is necessary for cell respiration, promotion of normal appetite and digestion, and maintenance of a healthy nervous system. Sources include enriched whole-grain products, liver, peas, and pork. Thiamin is heat sensitive and is easily leached into the cooking liquid. Proper food storage and preparation practices are essential to maintain the thiamin level in foods.

- ***Riboflavin*** (vitamin B_2) is necessary for the body to break down carbohydrates and keep the skin, tongue, and lips in normal condition. Sources include cheese, eggs, enriched breads, leafy green vegetables, lean meats, and legumes. Riboflavin is easily destroyed by exposure to light, especially sunlight. It is important to store these foods either in a pantry or in the refrigerator to prevent nutrient loss.

- ***Niacin*** (vitamin B_3) is vital to the nervous system. It helps cells convert food to energy and is beneficial for the mouth, skin, and tongue. It helps the digestive tract to function properly. Sources include liver, lean meats, whole grains, nuts, and legumes. Currently, there is research into the effects of niacin in lowering blood cholesterol. However, due to the toxic side effects of high doses of niacin, self-prescribed niacin supplements are not recommended.

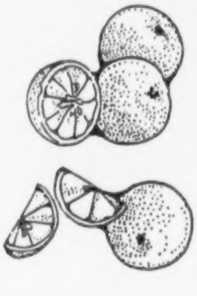
- ***Folate*** (also called folacin or folic acid) is necessary for the body to produce normal red blood cells and for the biochemical reactions of cells in the production of energy. Sources include wheat germ, wheat bran, yeast, leafy green vegetables, liver, and legumes.

- ***Biotin*** is essential in the breakdown of carbohydrates, lipids, and proteins in the body. Sources include liver, kidneys, egg yolk, vegetables, and fruits (especially bananas, grapefruit, watermelon, and strawberries.)

- ***Pantothenic Acid*** aids in the metabolism of fat and the formation of cholesterol and hormones. Sources include all plant and animal tissues with the best sources being liverwurst, meats, poultry, egg yolk, wheat germ and rice germ, tomato paste, sweet potatoes, oatmeal, and milk.

- ***Pyridoxine*** (vitamin B_6) is needed to help nervous tissues function normally, to maintain the health of the skin and red blood cells, and to participate in the metabolism of proteins, carbohydrates, and fats. Sources include liver, lean meats, cereals, vegetables, and milk.

- ***Cyanocobalamin*** (vitamin $_{B12)}$ is necessary in the development of normal growth, normal functioning of all body cells, metabolism of folate, and protection against pernicious anemia. Pernicious anemia primarily results from the body's inability to absorb vitamin B_{12}. However, it can result from a deficiency of vitamin B_{12} in the diet. Vitamin B_{12} is found only in animal protein. Liver, clams, oysters, muscle meats, eggs, chicken, and milk are the best sources.



- ***Ascorbic Acid*** (vitamin C) aids in the formation of hemoglobin, helps fight infection, aids in healing of wounds, aids in the formation and maintenance of collagen, and aids in the absorption of iron and calcium. Sources include citrus fruits, cantaloupe, strawberries, dark leafy green vegetables, broccoli, cabbage, and green peppers.

Research continues into the role vitamins and minerals play in preventing chronic disease and in maintaining health and wellness. The ***Recommended Dietary Allowances (RDA)***, developed by the National Academy of Sciences, serves as a guideline for determining the amounts of nutrients a specific person needs each day. The RDA is found in Appendix D of the *ESR IV* curriculum guide.

Minerals.

Minerals are necessary for building bones, tissues, and other compounds, as well as for regulating body processes. Minerals found in large amounts in the body are called ***macrominerals***. Macrominerals include calcium, phosphorus, magnesium, sodium, potassium, and chloride. Minerals found in small amounts in the body are called trace elements or ***microminerals***. Trace elements are iron, iodine, zinc, and fluorine. Figure 1 lists macrominerals, their primary functions, and sources. Figure 2 lists primary functions and sources of microminerals.

MACROMINERALS

Macrominerals	Functions	Sources
Calcium	• Needed for bone rigidity, blood clotting, muscle contraction, normal nerve functions • Just because an individual eats food containing calcium does not mean that the body absorbs the calcium. Factors that increase calcium absorption include: - an overall balanced diet - intake of vitamins D and C - intake of certain amino acids • Factors that decrease calcium absorption include: - a vitamin D deficiency - fat malabsorption - eating large amounts of fiber - lack of exercise - stress - lactose deficiency or lactose intolerance	Milk and milk products, soft-boned fish, calcium-fortified orange juice, leafy green vegetables, and broccoli.
Phosphorus	• Helps build strong bones and teeth, and is a significant factor in all phases of calcium metabolism	Meat, poultry, liver, fish, eggs, milk, other dairy products, raw oranges, cherries, peaches, rice, potatoes, and wheat flour. Eating foods high in calcium will provide adequate phosphorus.
Magnesium	• Helps regulate - body temperature - muscle contractions - the nervous system • Helps cells utilize - carbohydrates - fats - proteins	Green leafy vegetables; nuts, including Brazil, almonds, and cashews; muscle meats; salmon; cheddar cheese; beef liver; milk; and eggs. Vitamin D increases the body's absorption of magnesium.
Sodium, chloride, potassium	• These three work together to: - regulate the flow of fluids in the body - help regulate the nervous system - help regulate the muscle functions,including heart - help regulate nutrient absorption in the cells	Sources for sodium and chloride are found in table salt, while potassium can be found in meats, milk, bananas, leafy green vegetables, and citrus fruits.

Figure 1

MICROMINERALS

Microminerals	Functions	Sources
Iron	• Found primarily in the blood, where it combines with protein to form hemoglobin (oxygen-carrying protein in the blood.)	Liver and other organ meats, egg yolks, dried legumes, shellfish, leafy green vegetables, and enriched breads. It is estimated that only 10 to 15 percent of the iron in foods is actually absorbed.
Zinc	• Zinc is needed for the lungs to release oxygen.	Oysters, herring, egg yolks, and organ meats.
Copper	• Copper is necessary in the formation of hemoglobin.	Liver, bran flakes, and cocoa powder.
Manganese	• The role of manganese is not well-understood.	Nuts, rice, whole grains, beans, and leafy green vegetables.
Selenium	• Selenium works in conjunction with vitamin E to protect cells from destruction. It has been suggested that selenium may have a role in the prevention of cancer.	Fish, organ meats, shellfish, and eggs. Grains and other plants, grown in selenium-rich soil are also good sources.
Chromium	• Chromium maintains the normal glucose uptake into cells and helps insulin bind to cells.	Vegetable oils, egg yolks, whole grains, and meats. Fruits, vegetables, highly processed foods, and drinking water are generally poor sources of chromium.
Iodine	• Iodine is needed for the thyroid gland to produce thyroxine, which is essential for the oxidation rates of cells.	Iodized salt, ocean fish, seaweed, and milk.
Fluoride	• Fluoride is needed to prevent tooth decay.	Fluoridated drinking water, seafood, tea, fluoridated toothpaste, and fruits and vegetables grown in areas where natural fluoride level in the water is high.

Figure 2

Fats.

Fats are semisolid, energy-filled organic compounds found in animal and plant tissues. The term ***lipids*** is often used interchangeably with the term fat to describe fats, oils, and fat-related substances. Lipids in the simplest forms are called fatty acids. The major form of fat in the body and in foods is known as triglycerides. ***Triglycerides*** are chemical compounds that contain carbon, hydrogen, and oxygen. Fats or lipids are important sources of energy needed by the body. Calories from fat should not exceed 30% of the total daily calorie intake. Functions of fat in the body include:

- provide energy
- transport and absorb fat-soluble vitamins
- cushion vital organs in the body
- comprise part of the structure of body cells
- supply essential fatty acids
- add flavor to foods
- satisfy appetites by delaying hunger
- insulate the body
- serve as protection for nerves and blood vessels

Fats are classified as saturated, monounsaturated, or polyunsaturated. The more saturated the fat, the more solid it is at room temperature.

- ***Saturated fats*** have the most hydrogen. Saturated fats are found in butter, chocolate, egg yolks, lard, shortening, and many other foods. Saturated fats should not exceed 10% of the total calories from fat.
- ***Monounsaturated fats*** have less hydrogen than saturated fats. Some examples of monounsaturated fats include some cooking oils, olive oil, some peanut butter, and some salad dressings.
- ***Polyunsaturated fats*** have the least amount of hydrogen. Polyunsaturated fats are found in such foods as Brazil nuts, some cooking oils, some peanut butter, soft margarine, and walnuts.

Water.

Water is necessary in the body for many reasons. It acts as a solvent for nutrients and hormones. Water also transports nutrients to the cells and rids the body of waste products. It lubricates the joints, facilitates food passage, and regulates body temperature through conduction of heat, perspiration, and excretion. The body typically uses two to two and one-half liters of water per day. It is recommended that the daily diet include at least eight 8-ounce glasses of water per day. Sources of water include beverages, soups, water, and milk. Other sources are:

• vegetables	87 percent
• fresh fruits	86 percent
• eggs	74 percent
• beef	60 percent
• bread	36 percent

Functions of Dietary Fiber

Fiber has been one of the new *health words* since the early 60s. However, very few people really understand the role fiber plays in nutrition and health. Fiber comes from the contents of plants that the human body cannot digest.

There are many types of fiber. Fiber is classified into two categories: soluble and insoluble. Soluble fiber is dissolved in water and may help control diabetes and lower blood cholesterol levels in some people. Soluble fiber is found in some fruits, beans, and oat bran. Insoluble fiber is not able to be dissolved in water and therefore has different functions from soluble fiber. Insoluble fiber helps move food through the digestive tract. It aids in the prevention of colon and rectal cancer, helps to control diverticulosis, and helps prevent constipation. Diverticulosis is caused when bulging pockets form on the intestinal wall and can become inflamed. Sources of insoluble fiber are fruits, vegetables, wheat bran, whole wheat, and some beans.

Fiber has many functions in the body. Some of these functions that help prevent medical problems include:

- Keeps contents of the intestines moving and prevents constipation.
- Helps reduce the risk of colon cancer by allowing food to pass quickly through the digestive tract. This limits susceptibility to agents in food that might cause cancer.
- Stimulates muscles of the digestive track. Well-toned digestive track muscles aid in prevention of diverticulosis and hemorrhoids.
- Absorbs water and gives a feeling of fullness. This helps people feel full longer, contributing to healthy eating and weight control.

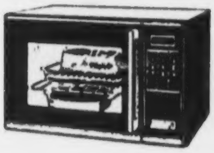
The United States Departments of Agriculture and Health and Human Services have adopted a set of seven guidelines that can help Americans choose a healthy diet. These guidelines address some of the problems with the diets of many Americans. The guidelines are found in Appendix F.

Retaining Nutrients in Food

While learning which nutritious foods to choose at the supermarket, it is important to learn how to store and prepare those foods so that most of the nutrients are retained. Several factors should be considered when storing and preparing foods to promote nutrient retention and to prevent nutrient loss.

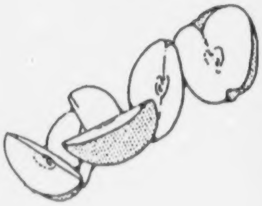
Many people assume they are getting all the nutritional value of a food just by eating it. What they do not stop to consider is that quality, storage, and preparation techniques all influence the amount of nutrients that are retained in food.

Many foods in our culture are considered highly palatable when eaten in their raw form. ***Palatable*** refers to the acceptability of the food to the palate, or taste. Foods that appeal to a person's sense of taste, smell, and sight, as well as foods with the appropriate temperature and texture, are considered palatable. Fruits and vegetables are the foods most commonly eaten in raw form. This is especially important when considering the nutrients that are not lost through cooking. In many cases, however, cooking improves the palatability, flavor, color, texture, and digestibility of food. Cooking also destroys organisms and bacteria that could cause food-borne illnesses.



Consumers can take precautions to preserve the nutrients in the foods they prepare by following some food preparation practices. Microwave cooking, steaming, and stir-frying are methods that improve nutrient retention in foods. Simmering foods in a small amount of liquid for a minimal amount of time also helps to improve nutrient retention. Some additional suggestions for preserving the nutrient content of foods prepared at home include:

- Avoid overcooking. Prolonged exposure to heat causes loss of some vitamins.
- Cover refrigerated foods with tight-fitting lids, foil, or plastic wrap.
- Cut fruits and vegetables in large pieces. Chop immediately before use to avoid unnecessary exposure to oxygen.
- Freeze or refrigerate leftovers immediately after use. Leaving foods exposed to room temperature increases nutrient loss, promotes an environment for bacteria to grow, and increases rate of spoilage.
- Include raw fruits and vegetables in menu planning and food preparation.
- Refrigerate most products to reduce nutrient loss.
- Rinse foods in cold water. Do not soak. This causes loss of valuable water-soluble nutrients.
- Thaw frozen foods in the refrigerator. More nutrients are retained at cooler temperatures, and this also inhibits the growth of organisms that can cause food-borne illness.



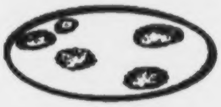
Food Safety

Food safety is a topic of interest and concern for professionals in the food industry as well as for consumers. Consumers need to be informed about food safety practices in the home. The Food and Drug Administration continually monitors the food supply to ensure its safety.

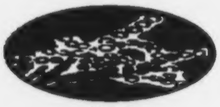
At least one million people in the United States suffer from food-borne illnesses each year. The hazards of food-borne illness can be avoided by sanitary food handling and effective food preparation techniques. To reduce the effects of contamination, the growth of microorganisms must be slowed by refrigeration or destroyed by heat. ***Microorganisms*** are tiny living cells that can be seen only with a microscope. Microorganisms are everywhere–in the body, in the soil, in the water, and in the air.

Microbiological hazards account for the most cases of food-borne illness. The four types of microorganisms that affect food are bacteria, viruses, yeasts, and molds. Food-borne illnesses caused by microbiological hazards are classified as either infections or intoxications. A ***food-borne infection*** is a disease caused by eating food containing harmful microorganisms. A ***food-borne intoxication*** is an illness caused by poisons or toxins in the food a person eats. The toxin may occur naturally in the food, as in certain mushrooms, or the food may be contaminated by toxins produced by certain microorganisms.

Bacteria


Viruses

Yeasts


Molds

Bacteria are small, single-cell organisms that can live anywhere people can. They thrive in a warm, moist environment that is neutral or slightly acidic. Bacteria are more commonly involved in cases of food-borne illness than are viruses, yeasts, and molds. Common names of some food-borne illnesses of bacterial origin are staph, botulism, perfringens poisoning, salmonellosis, and listeriosis. The bacteria that cause the illnesses are *Staphylococcus aureus, Clostridium botulinum, Clostridium perfringens, Salmonella, and Listeria monocytogenes.*

Viruses are the smallest and perhaps the simplest form of life known. They cause illnesses such as colds, influenza, and infectious hepatitis. Viruses do not increase in number while they are in the food. The food merely transports the viruses, which may then lodge themselves in the human host and produce abundantly.

Yeasts are fungi that require sugar, proper temperature, and moisture for growth. Yeasts often consume these ingredients in food products and spoil the food in the process. Yeast organisms can be killed by heating to 136°F (56°C) for about fifteen minutes. Yeast spoilage can create a slime on fruit juices or pickle brine (the solution in which pickles are preserved) or a pink discoloration in cottage cheese. However, no evidence suggests that yeast-producing diseases in humans are transmitted by food or that yeasts occurring naturally in foods are harmful to humans.

Molds are furry-looking fungi that can grow on almost any food at almost any storage temperature, under almost any conditions–moist or dry, acidic or nonacidic, salty, or sweet. The color of mold is usually white but also can be blue-green, orange, black, gray, or even red. Soft food items such as yogurt, sour cream, cheese slices, jams and jellies, tomatoes, and cucumbers with mold spots should be discarded. Figure 3 lists food safety guidelines that help people avoid food-borne illness.

FOOD SAFETY GUIDELINES—
AVOIDING FOOD-BORNE ILLNESSES

- Refrigerate or freeze leftovers immediately after use.
- Thaw frozen foods in the refrigerator, never on the counter. The warm temperature is a perfect environment for microorganisms to thrive.
- Keep hot foods hot, and cold foods cold. Lukewarm temperatures allow bacteria to grow.
- Use a meat thermometer when cooking meat and poultry. Insert the thermometer in the thickest part of the meat away from the bone. For poultry, the internal temperature should reach 180° to 185°F.
- Use a different cutting board and different utensils for preparing fruits and vegetables than is used to prepare raw meat and poultry.
- Carefully wash all utensils used to prepare raw meat and poultry in hot, soapy water.
- Wood cutting boards can be thoroughly cleaned in a bleach and water solution. The bleach will kill any bacteria left on the cutting board.

Figure 3

SELECTING A BALANCED DIET

Nutrition education is valuable only if children and adults make healthy food choices a part of their daily lives. This new nutrition knowledge is only worthwhile if it is put into practice everyday. The USDA's "Pattern for Daily Food Choices" illustrates the food guide presented in the "Dietary Guidelines for Americans" found in Appendix F. The "Pattern for Daily Food Choices" helps consumers use the guidelines by suggesting the number of servings to choose from each food group daily. It is found in Appendix C.

Self-Responsibility for Health and Wellness

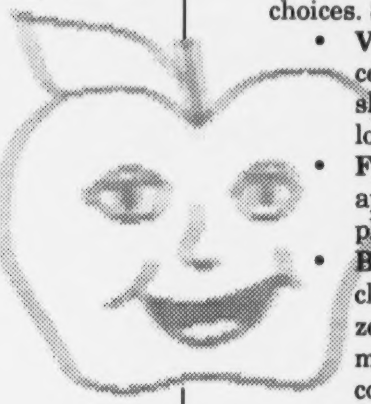
Most people, regardless of age, ultimately have control over what they actually eat. Therefore, each person assumes the responsibility for the food choices he or she makes. Thus, the *ESR IV* objective, "Make wise food choices as part of self-responsibility for health and wellness," is applicable to school children of all ages. A primary goal of nutrition education is to prepare school age children for a lifetime of healthy dietary habits.

Nutritious Snacks

Snacking has become part of the fast-paced American lifestyle. Nutritious snacks can contribute valuable nutrients and can help meet the daily nutrient requirements for persons of all ages. Snacks are especially beneficial for small children and older adults who have difficulty consuming adequate amounts of food at mealtime. Adolescence is a time of rapid growth, and many teenagers need snacks to provide additional nutrients and calories. Many people feel better when they consume five or six small meals rather than the customary three meals a day.

Snack foods not only contribute to daily nutrient needs, but also contribute to the total number of calories consumed.

There is an abundance of nutritious snack foods available to consumers. Offering people snack foods from the five food groups (Vegetables, Fruits, Breads and Cereals, Milk, and Meat) allows them to make nutritious choices. Some suggestions for nutritious snacks include:



- **Vegetables** such as broccoli and cauliflower florets, carrot sticks, celery sticks, cucumber slices, cherry tomatoes, and green pepper slices can be eaten alone or with dips made from low-fat yogurt or low-fat cottage cheese.
- **Fruits** that are easy to "take along" and make good snacks include apples, bananas, grapes, nectarines, oranges, peaches, pears, plums, raisins, and tangerines.
- **Breads and cereal products** are easy to serve for snacks. Include bagels, crackers, finger sandwiches, muffins, popcorn, pretzels, and tortillas in the list of snack choices. Children enjoy making shaped sandwiches by cutting bread into shapes with cookie cutters.
- **Milk beverages and milk products** such as cheese and yogurt are nutritious snack choices. Also included in this group are cottage cheese, frozen dairy products made with low-fat milk, and puddings. Adding fresh fruits to plain, low-fat yogurt makes a great snack and is lower in fat and calories than commercial fruit yogurts.
- **Meat group foods** can be snack foods, too. Tuna fish and peanut butter can be served with crackers or used as the filling for finger sandwiches. Nuts and seeds provide protein in the form of a crunchy, ready-to-eat snack.

It is important to be aware of the many snack foods that are high in calories, fat, salt, and sugar. Many of these foods contain coconut oil or palm kernel oil which are high in saturated fat. It is necessary to read the nutrition information on the labels carefully to be sure the oil used is one of the unsaturated oils, such as canola, corn, safflower, or soybean.

Food Choices and Peer Pressure

Typically, most Americans associate food and eating with social experiences. Even the family evening meal is a social gathering. Food choices and food preferences are influenced by family traditions, personal likes and dislikes, as well as those likes and dislikes of friends and family members. In teaching children and adolescents to make wise food choices, it is important to recognize that peer pressure is a major factor. Students who learn decision-making skills and have a good self-concept are more likely to be able to make food choices based on nutritional knowledge rather than on peer pressure.

NUTRITIONAL NEEDS DURING THE LIFE CYCLE

Nutritional needs change during the various stages of the life cycle. The varying stages of growth that take place from infancy through adolescence make different demands on the body's nutritional health. Likewise, the three stages of adulthood have different nutritional requirements.

Due to increased health awareness and advances in medical science, Americans are living longer than ever before. It is anticipated that by the year 2050, the percentage of the population age eighty-five years and older will increase to more than 5 percent of the total U.S. population. These predictions increase the need for consumers to understand the nutritional needs during the various stages of the life cycle. Figure 4 lists the stages and nutritional requirements of various stages of the life cycle.

Special Dietary Needs

In the last decade, the American population has taken a serious look at health and health issues. The relationship between lifestyles, daily diets, and health and fitness has become a topic of conversation and confusion for many people. Media attention to all types of special diets has caused alarm for many people. It is necessary to understand the health problems that require people to greatly modify their diets. Information related to low-cholesterol, low-fat, low-salt, and low-sugar diets is important for all consumers to know and understand.

Special Nutrition Requirements
During the Stages of the Life Cycle

Life Cycle Stage	Nutrition Requirements
Pregnancy (includes nursing mothers)	Approximately 300 additional calories are required each day for increased energy needs. Weight gain should average between 24 to 28 pounds during pregnancy. A well-balanced, nutritious diet is important because of the increased need for protein, vitamins, and minerals. The diet should include more milk products and more fruits and vegetables.
Infancy (Birth through 1 year)	Most of the infant's nutritional needs during the first year are met through human milk or infant formula. Formulas contain amounts of protein, vitamins, and minerals recommended by the American Academy of Pediatrics. Some formulas are iron-fortified. It is not recommended that solid foods be given to infants until four to six months of age.
Early Childhood (2 years through 5 years)	Childhood obesity and iron-deficiency anemia are the two nutritional problems most commonly diagnosed during childhood. Children should be fed nutritious foods at every meal. Breakfast is especially important, and nutritious snacks help meet the child's daily nutrient needs. Iron-fortified breakfast cereals and lean meat help supply daily iron requirements.
Middle Childhood (6 years through 12 years)	Children should be encouraged to eat a variety of nutritious foods at mealtime and snack time in order to meet their daily nutritional needs for growth and development. Children of this age can learn to choose healthy foods. Snack foods may need to be monitored at this time because
Adolescence (13 years through 20 years)	Rapid growth periods occur in girls between the ages of 10 and 13 years, and in boys between the ages of 12 and 15 years. Consumption of well-balanced, nutritional meals is important during these years. An increased need for calcium occurs due to rapid bone growth. Teens need to increase their intake of foods from the milk group. Poor food choices during adolescence lead to inadequate intake of calcium, vitamin A, and fiber, iron-deficiency anemia, and excessive intake of saturated fats, sugar, and empty calorie foods.
Young Adulthood	It is important for young adults to realize that the food choices, health practices, and lifestyle decisions made in the young adult years have significant effect on health and wellness in later life. Eating a well-balanced diet and exercising on a regular basis are good beginnings for young adults. Iron and calcium intakes are very important. Refrain from smoking and consuming alcohol and try to manage stress.
Middle Adulthood (41 years through 65 years)	Adults in this stage need to follow the guidelines for good health and disease prevention. These guidelines recommend that people should eat a variety of foods, maintain desirable weight, avoid too much fat, saturated fat, and cholesterol, increase intake of foods with sufficient starch and fiber, avoid eating too much sugar and sodium, exercise regularly, refrain from smoking and moderate alcohol intake, and try to manage stress.
Older Adulthood (over 65 years)	A healthy diet can help reduce some of the effects of aging. Poor nutritional health at this stage can affect the severity of disease, as well as affect mental function. Some guidelines for nutritional health for older adults include four to six small meals eaten frequently, sufficient intake of vitamins B_6, B_{12}, thiamin, C, D, E, and the minerals calcium, iron, and zinc is important. Regular exercise is needed to stimulate appetite and food intake. Weight loss can increase the risk of death following illness or disease.

Figure 4

BEST COPY AVAILABLE

Advances in medical science have shown an increasing relationship between the food consumed and good health and that diet is related to disease and recovery. Recently, diet and health information has centered on preventive measures that might reduce a person's risk of heart disease, diabetes, or cancer.

Lowering Blood Cholesterol Levels.

In recent years, cholesterol has received much media attention and has become a household word. Cholesterol is an odorless, soft, waxy substance found in every cell in the body. Cholesterol performs several functions in the body. These include:

- to aid in digestion
- to contribute to the structure and function of cell membranes
- to assist in the manufacture of vitamin D (calciferol) and hormones

It is not necessary to eat foods containing cholesterol because the liver makes most of the cholesterol that the body needs. Even though cholesterol is found in every cell in the body and is necessary for its function, it also makes up the main part of the plaques that block the arteries in atherosclerosis.

Cholesterol travels through the bloodstream in lipoproteins. Lipoproteins are lipids combined with proteins that transport lipids in the blood. There are two types of lipoproteins that transport cholesterol throughout the body. The two types are:

- low-density lipoprotein (LDL)
- high-density lipoprotein (HDL)

Low-density lipoproteins (LDL) carry cholesterol from the liver throughout the body but do not return the cholesterol to the liver. Therefore, cholesterol remains in the arteries and can cause a buildup in the artery walls. High-density lipoproteins (HDL) clear excess cholesterol from the arteries and carry it back to the liver where it is processed and removed from the body. LDL is often called "bad" because of its inability to remove cholesterol from the bloodstream. HDL is often called "good" because of its ability to prevent cholesterol and fat deposit buildup in the artery walls. It is this buildup of cholesterol plaques that contributes to advanced atherosclerosis.

DIETARY GOALS FOR LOWERING BLOOD CHOLESTEROL LEVELS

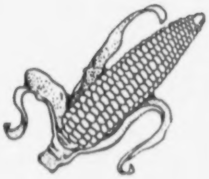
1. Reduce total fat intake to 30 percent of total calories.
2. Include more whole grains in the daily diet.
3. Eat fish more often.
4. Increase consumption of fiber-rich fruits and vegetables.
5. Add the many varieties of legumes to the daily diet more often, such as dried beans and peas and soybeans.
6. Include nonfat or low-fat milk and milk products every day.
7. Reduce the cholesterol-rich foods in the diet, especially organ meats, egg yolks, shellfish, and fatty red meats.

Figure 5

Cholesterol is found only in foods of animal origin. Foods high in cholesterol are egg yolks, liver organ meats, shellfish, lard from animals, and butter. Foods that contain no cholesterol or are low in cholesterol include egg whites, fruits, vegetables, and grains and grain products. One of the major factors in blood cholesterol levels is the dietary intake of fats—particularly saturated fats. Fats are discussed in detail in the earlier section on "Fats." There are certain dietary goals that prove beneficial in lowering blood cholesterol levels. These dietary goals for lowering blood cholesterol are described in Figure 5.

Achieving Low-Fat Diets.

Many Americans are selecting low-fat diets and exercising in an attempt to reduce their risk of coronary heart disease and cancer. ***Fats*** are lipids that are in a solid state at room temperature. ***Oils*** are lipids that are in a liquid state at room temperature. ***Lipid*** is the scientific term that includes all of the fats, fat-related substances, and oils. Fat is one of the essential nutrients and performs several functions in the body. Fats, or lipids, help maintain healthy cell walls, store energy, and transport the fat-soluble vitamins A, D, E, and K throughout the body. Without the presence of fat, these vitamins would not be utilized.



Linoleic acid is an essential fatty acid. It is found in polyunsaturated fat substances, and is important for clotting blood and lowering blood pressure. Linoleic is the only fatty acid the body does not make. It must be eaten in plant foods such as corn, safflower, or soybean oils. Figure 6 gives the formula for figuring the percent of fat calories in the diet.

Figuring the Percent of Fat in the Diet

Number of grams of fat
X 9 calories per gram
Total number of calories from fat

Total number of calories from fat ÷ Total number of calories daily = Percent of calories from fat

Example: An adolescent who eats 2,000 calories per day could figure the percent of his or her diet that was from, fat if 80 grams of fat were consumed.

80 grams of fat
X 9 calories per gram
720 calories from fat

720 calories from fat ÷ 2000 calories per day = 36 % from fat

Figure 6

To Achieve a Low-fat Diet

- Read labels to learn the fat content of foods.
- Choose to bake, broil, braise, or steam foods; eliminate frying.
- Refrigerate soups and stews before serving. Skim off hardened fat.
- Reduce intake of high-fat desserts.
- Reduce consumption of bacon, sausage, and luncheon meats.
- Use herbs, spices, and lemon juice to season and flavor foods.
- Choose canned fish products packed in water.
- Try using low-fat, low-calorie salad dressings.
- Use non-stick sprays in frying pans before sauteing.
- Choose low-fat or fat-free menu items and snack foods.
- Skin poultry and trim visible fat from lean meats.
- Use vegetable protein sources such as lentils, dried beans, and peas.
- Use low-fat and nonfat dairy products.
- Reduce consumption of foods high in saturated fat.
- Reduce total dietary fat intake.

Figure 7

At nine calories per gram, fats supply twice as much energy as carbohydrates and proteins. Carbohydrates and proteins provide four calories of energy per gram. It is not necessary to consume a fat-rich diet because the body makes fat from excess carbohydrates and proteins not used for energy. Diets containing large amounts of fat can lead to health risks.

Health professionals believe that the average American diet contains too much fat. Although there is no RDA for fat, it is recommended that fat intake be limited to 30 percent of the total calories.

Some commonly eaten foods may have a higher fat content than many consumers realize. For example, amounts of fat in common foods include:

- Hamburger with mayonnaise—approximately 35 grams of fat, 315 calories from fat
- Club sandwich—approximately 30 grams of fat, 270 calories from fat
- Fried onion rings—approximately 23 grams of fat, 207 calories from fat
- Beef burrito—approximately 21 grams of fat, 189 calories from fat
- Baked potato with sour cream and chives—approximately 24 grams of fat, 216 calories from fat
- Baked potato, plain—approximately 2 grams of fat, 18 calories from fat

(These are approximate amounts. The exact fat content would vary, depending on the serving size and method of preparation.)

High-fat diets lead to elevated blood cholesterol levels. People with abnormally high blood cholesterol levels are in a high-risk group for advanced atherosclerosis. In order to maintain a normal blood cholesterol level, people should reduce their intake of saturated fats. Figure 8 lists examples of foods high in saturated and unsaturated fats.

Foods High in Saturated Fat

- Bacon, some luncheon meats
- Beef, lamb, pork, chicken with skin
- Butter and lard
- Cakes, pastries
- High-fat cheeses
- Sour cream and ice cream
- Tropical oils (coconut, palm, and palm kernel)

Foods High in Unsaturated Fat

- Nuts—peanuts, pecans, cashews, walnuts
- Soft margarines and spreads
- Vegetable oils—canola, corn, cottonseed, safflower, soybean, sunflower

Figure 8

Sodium and Hypertension.

Sodium and potassium are minerals that function in the body as electrolytes. Electrolytes affect the way fluid is distributed in the body and aid the nervous system in transmitting nerve impulses that control muscle action. This is very important in keeping the heart beating normally. Sodium also helps the kidneys to maintain a normal acid/alkali balance in a person's body. Potassium loss along with sodium loss causes vomiting, diarrhea, and increased sweating. Replace fluids with juices and fruit. There is no need to take salt tablets.

There is no minimum daily requirement or RDA for sodium because the American diet shows no evidence of shortage of this mineral. In fact, the opposite is more likely true. A large portion of the population has elevated sodium levels. For individuals with hypertension, sodium intake should be regulated. ***Hypertension***, or high blood pressure, means that the heart must work much harder to pump the blood. High blood pressure can be hereditary and can be intensified with obesity and too much sodium in the diet.

Due to the increased incidence of hypertension in adults, The National Research Council, Food and Nutrition Board, recommends that healthy adults and children consume no more than 2400 milligrams of sodium per day. Figure 9 lists commonly eaten foods that are high in sodium.

Foods High in Sodium

Food	Amount	Sodium Content (mg)
Bacon	3 slices	303
Catsup	2 Tbsp.	312
Salt	1 tsp.	2100
Worcestershire sauce	1 Tbsp.	315
Cheese, processed	1 oz.	406
Frankfurter (beef and pork)	1	504
Peanuts, salted	1 c.	626
Pizza, cheese	1 slice	699
Luncheon meat	2 pieces	810
Cottage cheese, small curd	1 c.	850
Soup, canned tomato	1 c.	872
Pickles, dill	1 whole	928
Olives, green	10	936
Burrito, bean	1	1030
Ham, lean	3 oz.	1128
Corn dog	1	1252
Enchilada	1	1332
Smoked Salmon	3 oz.	1700

Source: "Nutritive Value of Foods," *Home and Garden Bulletin No. 72*, United States Department of Agriculture, Revised April 1981.

Figure 9

Reducing Sugar in the Diet.

The average American consumes an estimated sixty to eighty pounds of sugar a year. That is approximately one-fourth pound of sugar per day. One reason for this high intake of sugar could be the amount of hidden sugar found in convenience food items not normally thought of as sweets.

PURE
VERMONT
Maple Syrup

Several carbohydrates are broken down into simple sugars during digestion. These terms often are used on food labels in place of the word *sugar*. Figure 10 lists the most commonly used terms.

Food labels also may have other terms for sugar which include:

- brown sugar
- confectioner's sugar
- corn sweeteners
- corn syrup
- dextrose
- granulated sugar
- high-fructose corn sweeteners
- honey
- invert sugar (glucose and fructose)
- maple sugar
- molasses
- natural sweetener
- raw sugar

Sugar Terms Most Commonly Used on Food Labels

sucrose—	white refined table sugar, brown sugar, confectioner's sugar
fructose—	the most concentrated sweetener (found in fruits); small amounts provide the same sweetening as larger amounts of other sugars
maltose—	malt sugar; found in breads and cereals
lactose—	milk sugar; found in milk and milk products
glucose—	honey, corn syrup

Figure 10

The Dietary Guidelines for Americans found in Appendix F suggests that people increase their intake of complex carbohydrates and decrease their intake of simple carbohydrates. Currently, it is estimated that the typical American consumes 25 percent from complex carbohydrates.

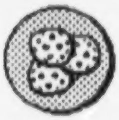
It is recommended that people reduce their simple carbohydrate intake to only 10 percent of total calories and increase their complex carbohydrate intake to 50 percent of all calories. Diets low in pure sugar and high in complex carbohydrates are generally lower in fat and calories and higher in fiber than diets that contain a large percentage of pure or refined sugars.

All forms of sugars, as well as all digestible carbohydrates, have four calories per gram. High-sugar foods are not recommended for people who have health problems such as diabetes, obesity, heart disease, and tooth decay.

Figure 11 lists foods that contain simple carbohydrates and those that are classified as complex carbohydrate foods. Foods from the complex carbohydrate list should be chosen as sources of energy and for their valuable vitamins and minerals.

Simple and Complex Carbohydrate Foods

Simple Carbohydrate Foods
cakes
candies
cookies
dried fruits
honey
jams and jellies
pastries
soft drinks
sugars
syrups



Complex Carbohydrate Foods
breads
cereal grains
crackers
fresh fruits
fresh vegetables
legumes
pasta

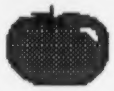


Figure 11

There is no evidence that a high-sugar diet causes heart disease. The relationship to heart disease occurs because persons with high-sugar diets are often overweight. Obesity is a risk factor for heart disease. Too much sugar in the diet is a factor for tooth decay. Sugary foods create a perfect climate in the mouth for the growth of bacteria that destroys tooth enamel and causes tooth decay.

Consumers must learn to identify sugar in their diets. Strategies for reducing the amount of sugar in the diet include the following:

- Select pure fruit juices rather than soft drinks or imitation fruit drinks.
- Choose unsweetened cereals rather than the presweetened varieties. Learn to read the labels for sugar content.
- Eat fruits canned in natural juices rather than in heavy syrups.
- Reduce intake of "empty calorie" foods. Empty calorie foods contain calories but no nutritional value, such as soft drinks.
- Select fresh fruits for snacks. The sugar content of dried fruits is much higher.
- Try using the sweet spices—allspice, cardamom, cinnamon, cloves, coriander, ginger, and nutmeg—to replace some of the sugar in recipes.
- Be aware that a product is high in sugar if sugar is one of the first three ingredients listed on the label.

Nutrition and Disease

Nutrition plays an important role in the prevention and treatment of certain diseases and health problems. The body's ability to resist disease is directly related to nutritional health.

Nutrients found in food are essential for overall health and well-being. Although nutrients do not cure an illness as medicines do, the well-nourished body is better prepared to fight disease and keep itself healthy. Preventive nutrition is the process of maintaining good health and well-being through good nutrition practices before illness occurs.

The Common Cold.

Many people believe that consuming large amounts of a certain food or taking large doses of vitamin supplements will cure an illness or disease. For many years, it has been rumored that consuming large doses of vitamin C (ascorbic acid) will prevent or cure the common cold. Scientific research indicates that large doses of vitamin C have no effect on the virus that causes colds.

Since vitamin C is a water-soluble vitamin, amounts above the body's daily need is excreted through the urine. However, it has been shown that megadoses of vitamin C above 2 grams can be harmful. Two grams of vitamin C are equivalent to 2,000 milligrams. The U.S. RDA for vitamin C is 60 milligrams. Therefore, a person who take four 500 milligram vitamin C tablets is consuming three and one-half times the recommended amount. The person whose diet meets the minimum daily requirement of nutrients will most likely suffer less severely from colds, and the person will possibly recover sooner.

Cancer.

Research has shown that diet and nutrition are related to cancer in several ways. It is evident that people's eating habits influence their susceptibility to certain kinds of cancer. However, there are many factors involved when considering the cause, prevention, and recovery from cancer. Besides diet and nutrition, genetic and environmental factors are also known to be involved. The challenge for researchers is to continually compare the dietary practices of those persons who get cancer with those who do not. One factor is clear, the risk of developing cancer may be greatly reduced in persons who make wise food choices and eliminate tobacco consumption.

Reduction of cancer risk by diet does not depend on any single factor, but requires an overall change in eating patterns and food preparation methods. The American Cancer Society has recommended the following guidelines for the public.

The American Cancer Society Dietary Guidelines.

1. **Avoid obesity.**
2. **Cut down on total fat intake.**
3. **Include a variety of vegetables and fruits in the daily diet.**
4. **Eat more high fiber foods, such as whole grain cereals, vegetables, and fruits.**
5. **Limit consumption of alcoholic beverages.**
6. **Limit consumption of salt-cured, smoked, and nitrite-cured foods.**

Research on cancer risk and the diet suggests that people modify their food choices using these guidelines so as to reduce their risk of developing cancer. Choosing a wide variety of nutrient-rich foods as well as reducing fat intake and increasing intake of vegetables and fruits is a prescription for healthy eating.

The American Cancer Society has a new comprehensive program that incorporates the most up-to-date educational strategies and information on the links between diet, nutrition, and cancer. This program, "Changing the Course," includes a nutrition curriculum for elementary, intermediate, and secondary students, and a manual for school food service providers.

Diabetes.

Diabetes is a genetic disorder and is not caused by eating too much sugar. Diabetes occurs in an individual whose pancreas does not produce enough insulin to control blood sugar levels. Diabetics must control their dietary intake in order to maintain normal blood sugar levels.

Heart Disease.

It is estimated that more than half of the people who die in the United States each year die of cardiovascular disease. Cardiovascular disease is a term that covers all the diseases of the heart and blood vessels. Most of these deaths can be attributed to atherosclerosis. ***Atherosclerosis*** is an accumulation of lipid plaque within the arterial wall which results in a narrowing of the artery. It is also known as a hardening of the arteries. Lipid is a term used to describe fats, oils, and fat-related substances. Atherosclerosis leads to the closing or blocking of the arteries that supply blood to the heart and brain. Obstruction or blockage in the arteries can cause heart attacks and strokes.

Most people have some plaque in their arteries. The important factor is how advanced the buildup is and what can be done to slow down its progression.

Risk Factors Relating to Atherosclerosis

- **Smoking.** Smoking is considered one of the causes of heart disease. Smoking reduces the level of HDL cholesterol; HDL is the good cholesterol.
- **Gender.** Males are more prone to heart disease than females.
- **Heredity.** Persons with a family history of heart disease and diabetes have a greater risk.
- **High blood pressure.** Also known as hypertension, high blood pressure is a major risk factor in heart disease and strokes.
- **High blood cholesterol level.** It is generally recommended that blood cholesterol levels be lower than 200 milligrams per 100 milliliters of blood.
- **Lack of exercise.** Regular exercise helps control weight, reduces stress, and improve circulation.
- **Obesity.** Obesity causes increased stress on the heart and other organs and increased levels of serum cholesterol.
- **Stress.** There appears to be some link between a person's personality, reaction to stress, and heart disease.
- **Personality characteristics.** Type A behavior. Type A personalities are most generally competitive, resist fatigue, tense, and withhold emotions.

Figure 12

By identifying and controlling the risk factors that are present in one's life, a person can slow the progression of atherosclerosis. Figure 12 lists the risk factors related to atherosclerosis. Good nutrition, along with the other factors, plays an important role in preventing heart disease. Research has shown that it is a combination of the risk factors, rather than just any one in particular, that makes some persons more susceptible to heart disease than others.

The American Heart Association has devised an eating plan that helps lower blood cholesterol levels. The eating plan is based on these American Heart Association dietary guidelines:

- Total fat intake should be less than 30 percent of calories.
- Saturated fatty acid intake should be less than 10 percent of calories.
- Polyunsaturated fatty acid intake should be no more than 10 percent of calories.
- Monounsaturated fatty acids make up the rest of total fat intake, about 10 to 15 percent of total calories.
- Cholesterol intake should be no more than 300 milligrams per day.
- Sodium intake should be no more than 3000 milligrams (3 grams) per day.

The American Heart Association "Eating Plan Tips" are shown in Figure 13.

Eating Plan Tips

To control the amount and kind of fat, saturated fatty acids, and dietary cholesterol you eat:

- **Eat no more than 6 ounces (cooked) of lean meat, fish, and skinless poultry per day.**
- **Try main dishes featuring pasta, rice, beans, and/or vegetables. Or create "low-meat" dishes by mixing these foods with small amounts of lean meat, poultry, or fish.**
- **The approximately 5 to 8 teaspoon servings of fats and oils per day may be used for cooking and baking, and in salad dressings and spreads.**
- **Use cooking methods that require little or no fat—boil, broil, bake, roast, poach, steam, saute´, stir-fry, or microwave.**
- **Trim off the fat you can see before cooking meat and poultry. Drain off all fat after browning. Chill soups and stews after cooking so you can remove the hardened fat from the top.**
- **The 3 to 4 egg yolks per week included in your eating plan may be used alone or in cooking and baking (including store-bought products).**
- **Limit your use of organ meats such as liver, brains, chitterlings, kidney, heart, gizzard, sweetbreads, and pork maws.**
- **Choose skim or 1% fat milk and nonfat or low-fat yogurt and cheeses.**

To round out the rest of your eating plan:

- **Eat 5 or more servings of fruits or vegetables per day.**
- **Eat 6 or more servings or breads, cereals, or grains per day.**

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Figure 13

Along with the dietary changes for reducing the risk of coronary heart disease, other lifestyle changes also reduce the risk. These are identified in Figure 14.

LIFESTYLE CHANGES THAT REDUCE THE RISK OF HEART DISEASE

- **Stop smoking.**
- **Reduce blood pressure through diet or medication.**
- **Reduce body weight if needed.**
- **Increase exercise and activity.**
- **Reduce stress and enjoy life.**

Figure 14

As research concerning the relationship of diet, exercise, and coronary heart disease continues, people must stay informed of the latest findings, and in the meantime, take a rational approach to modifying their diet. The recommendations from the health professionals seem to be that persons who do not suffer from any particular health problem should choose a healthful diet by eating a variety of foods in moderate amounts that supply their daily nutrient requirements. This practice will ensure a lifetime of healthy eating.

Americans are striving to become a healthier population. More people than ever before are taking an interest in their nutritional and overall health and well-being. Hopefully, this will lead to a drastic reduction in the number of deaths from cardiovascular disease.

CULTURAL ASPECTS OF FOOD

Cultural, societal, and religious laws have great influence on all aspects of food consumption. ***Society*** refers to a group of people who share a common culture and live within a common region. ***Culture*** refers to the beliefs, traditions, and values that are shared by the people within a society. In the American society, citizens depend on advances in science and technology to continually improve the way food is produced, harvested, and transported. However, within the American society there are subcultures that restrict the use of certain types of food. For example, the Amish culture restricts the use of advanced technology in producing, harvesting, or transporting food for the Amish people.

Within all societies, many different cultural laws affect food consumption. In some instances, governments restrict the import or production of certain foods due to cultural or religious beliefs. In most societies, food is used as a symbol of love, affection, and social ties to family and friends. These food traditions serve to strengthen family and social relationships.

In all societies, food has been used to distinguish social class and to symbolize wealth and prestige. Many pregnant and nursing women avoid eating certain foods because they believe the foods cause harm to the unborn child. The cultural beliefs, traditions, and values of people within societies determine the customs for how food is used.

Religious Customs

Religious beliefs within societies influence the many rituals and customs surrounding food. Some societies believe that avoiding certain foods protects them from harm. Some religions have customs surrounding the consumption of certain foods during religious holidays or special holy days. Many religious ceremonies are accompanied by feasts with family members and friends. In the United States, religious ceremonies such as baptisms, weddings, and funerals are usually followed by a gathering involving food.

NUTRITION ISSUES

Americans are living in the midst of an "information explosion." Every day new information is presented to consumers to be digested, assimilated, or rejected. With all of this wealth of information to be considered, it is not surprising that many consumers have experienced "information overload" and need guidance in sorting fact from fiction. The science of nutrition is deeply involved in this "information explosion." Currently, there are some nutrition issues that seem to be concerns of many consumers. These issues include eating disorders, fad diets, vitamin/mineral supplements, nutrition labeling, weight control, and physical fitness.

Eating Disorders

Eating disorders, primarily anorexia nervosa and bulimia nervosa, are diseases that are characterized by a preoccupation with weight loss and thinness. These disorders can have damaging effects on the physical and mental health of the persons plagued by them. Compulsive overeating is also recognized as an eating disorder.

Anorexia Nervosa.

In an affluent society where food is plentiful, an illness known as anorexia nervosa affects almost one out of every 100 young women. ***Anorexia nervosa*** is an eating disorder characterized by an obsessive and compelling desire to be thin. Out of every twenty young people with this disorder, nineteen of them are female. This disorder resembles an addiction because the person becomes totally obsessed with weight loss and a lifestyle of self-prescribed starvation takes over. This self-imposed starvation slowly begins to affect the person's personality and ability to think rationally. Many times this obsession with thinness causes the person to resort to excessive exercise in combination with the starvation. This can result in serious bodily injury because the body has not been supplied with the energy and nutrients needed. Physical symptoms of anorexia nervosa are shown in Figure 15.

One of the consequences of malnutrition secondary to anorexia nervosa is anemia. Anemia is a condition in which the blood cannot transport oxygen to the cells in the body. This is caused by a shortage of red blood cells or the presence of abnormal ones. Anemia is often a result of nutritional deficiencies and other diseases.

Physical Symptoms of Anorexia Nervosa

- *Deterioration of the body; especially muscle wasting and inadequate fat stores*
- *Menstruation stops in females; impotency occurs in males*
- *Skin assumes dry, yellowish tint*
- *Low blood pressure*
- *Heart function becomes inefficient due to the effect of starvation on hormones that regulate blood pressure*
- *Excessive hair growth on the body (possibly for warmth)*
- *Anemia*
- *Interrupted sleep patterns; bad dreams*
- *Feels fat (distorted perception)*

Figure 15

The treatment for anorexia nervosa is threefold. First, it involves medical personnel in the diagnosis and treatment of the medical complications that arise from prolonged starvation. Second, the treatment involves psychiatric or psychological personnel identifying and treating the underlying psychological problems which manifest as severe eating disorders like anorexia nervosa and bulimia nervosa. Third, the dietitian provides nutrition counseling for the patient to help with maintaining a balanced, nutritious diet.

Bulimia Nervosa.

Bulimia nervosa is another eating disorder that has plagued our affluent society since it was first recognized as a medical disorder in 1980. It is similar to anorexia in that it seems to strike mostly young women who have an obsession with an unrealistic perfect body. Some characteristics of people with bulimia include:

- They participate in binge eating followed by purging. Purging is an attempt to remove food from the body either by self-induced vomiting or the continual use of laxatives.
- They are successful and desire perfection.
- They turn to food in a crisis.
- They have a history of dieting and weight gain during the teen years.
- They binge and purge secretly.

Bulimia nervosa is an eating disorder characterized by self-induced vomiting following binge eating. Binge eating is the overindulgence of food without control or rational judgment about the amount being consumed. Sometimes a person with bulimia uses laxatives, diuretics, fasting, and excessive exercise to rid his or her body of what is thought to be harmful. These binge/purge cycles are not in response to hunger, but rather a compelling need by the person with bulimia to rid his or her body of food that might cause weight gain. Bulimic behavior is sometimes brought on by family stress or feelings of rejection. Characteristics of a person with bulimia are low self-esteem, social anxiety, depression, isolation, and difficulty with interpersonal relationships. Figure 16 lists the dangerous effects of bulimia.

Dangerous Effects of Bulimia Nervosa

- *irritation of the esophagus*
- *abnormal heart rhythms*
- *injury to the kidneys*
- *bladder and kidney infections, possibly causing kidney failure*
- *lacerations or tears to the stomach, caused by excessive vomiting*
- *tooth decay*
- *malnutrition*

Figure 16

The treatment for bulimia nervosa is similar to that of anorexia nervosa because it involves the assistance of medical, psychological, and dietetic personnel. Through nutrition counseling, psychotherapy, and medical therapy, the bulimic patient can regain a new sense of self-worth and learn ways to control the need for binge eating. However, our society must change its attitude toward the unrealistic images of perfect people with perfect bodies that are expressed through the media.

It is imperative that positive messages of respect and value for each individual's unique qualities and talents replace those negative messages currently seen by the young people of the affluent nations. Ideally, this type of societal change would greatly reduce the number of victims of anorexia nervosa and bulimia.

Weight Control

Consumers as well as nutritionists and physicians are continually being challenged with maintaining ideal weight throughout adulthood.

Research has shown that serious overweight problems lead to many health problems such as coronary heart disease, diabetes, gall bladder disease, high blood pressure, respiratory problems, and stroke. Overweight people also face problems with fatigue and degenerative arthritis.

Once a person has a serious weight problem, finding solutions to weight loss become increasingly more difficult. It is definitely more difficult to lose excess weight than it is to maintain ideal weight in the beginning. Weight loss will only occur as a result of expending more calories through exercise and activity than is consumed through food. Most generally eating habits and behavior must be changed in order to maintain the ideal weight once the excess weight is lost. This requires self-discipline and is difficult, but it also restores self-esteem, self-confidence, and gives a feeling of accomplishment.

Fad Diets

Americans look for quick and easy fixes to the overweight problem. These quick fixes or "fad diets" cause their followers many disappointments, such as:

- disillusionment
- loss of money
  (from purchasing products, equipment, *remedies*, etc.)
- unsuccessful weight loss
- weight gain with an increase of body fat

These fad diets fail because they are not generally nutritionally balanced, are unhealthy, and provide only a temporary solution to a permanent problem. They do not follow sound nutritional practices or change life-long eating habits.

On the other hand, effective diet plans that are prescribed and conducted under the supervision of registered dietitians and physicians provide the overweight individual with a much better chance at success. Some characteristics of effective diet plans include:

- nutritionally balanced meal plans
- methods for teaching new eating habits
- menus that offer choices of a wide variety of foods
- meal plans that include a balance of calories (the recommended proportion of carbohydrate, fat, and protein)
- satiety value which keeps the person feeling satisfied and delays hunger for a period of time
- an average of 1200 calories per day for adult women and 1500 calories per day for adult men (less than 1,000 calories per day will not provide the needed nutrients and will most likely leave the person feeling tired and hungry)

Weight control and weight loss in children and adolescents must be carefully monitored by physicians. Due to the rapid growth and development than occurs during these years, it is imperative that any weight loss programs for children and adolescents be prescribed and supervised. Rapid weight loss and calorie restriction in children and adolescents can cause serious health hazards.

Vitamin and Mineral Supplements

Americans spend billions of dollars in vitamin supplements. Many people use vitamin-mineral supplements because they feel their fast food and snack food diets are inadequate in providing the essential nutrients.

Vitamins work cooperatively with each other and with other nutrients to perform their functions in the body. Therefore, the best way to meet the daily need for nutrients is through a balanced diet that contains a wide variety of foods.

By law, all vitamins must have the same chemical formula, whether they are *natural* or *synthetic*. Natural vitamins are made with extracts from foods. Synthetic vitamins are chemically formulated. The human body cannot distinguish one from the other, so it is not necessary to purchase the more expensive *natural* vitamins.

There are some people who do have vitamin and mineral deficiencies and need to take nutrient supplements. Some people who may be at risk for deficiencies include:

- pregnant and lactating women
- elderly persons with inadequate diets
- persons recovering from burns, injuries, or surgery
- children and adolescents with inadequate diets
- persons with chronic illnesses
- individuals with gastrointestinal malabsorption problems
- alcoholics

In most circumstances, vitamins taken in excess are of no value. Megadoses of vitamins A (retinol) and D (calciferol) can cause serious health problems. Fat-soluble vitamins such as A and D that are not used by the body are stored in fat. This makes a buildup of these vitamins more likely and more toxic. Water-soluble vitamins not used by the body are excreted in the urine, making it less likely for toxic levels to occur.

Labeling

The Nutrition Information Panel is the term used to describe the nutrition content information that is printed on food labels. Nutritional labeling guidelines were first established by the Food and Drug Administration in 1938. In 1967, the Fair Packaging and Labeling Act required that all labels on packaged foods contain four important facts.
These include:

1) identity of the food
2) the name and address of the manufacturer, packer, and distributor
3) net contents (actual weight without the package) of the product
4) ingredients must be listed on a single panel with the common names of the ingredients appearing in decreasing order of weight if no standard of identity has been established

The FDA is in the process of amending the food labeling regulations. Some problems that have occurred because the labels are not currently standardized include:

- Many labels omit cholesterol information
- Many labels fail to specify carbohydrates as starch or sugar
- The fiber content is often omitted
- Many labels fail to specifically identify the oils used

Increased scientific knowledge about the relationship between health and certain food components such as cholesterol, fats, fiber, and sodium has prompted the FDA to update the labeling laws. These changes were also influenced by the growing public interest in the nutritional status of food products. The new labeling will be required on almost all packaged foods as well as fresh fruits, vegetables, and fish. These new labeling regulations also may be required of restaurants. Restaurants and fast-food establishments may be required to place nutrition information on menus or have the information accompany the food in some written form.

Sources of Reliable Nutrition Information

A variety of resources are available to provide the consumer with reliable nutrition information. Amidst the enormous amount of diet and nutrition information presented by the media, it is sometimes difficult for consumers to distinguish fact from fallacy. In teaching nutrition education to children, adolescents, and adults, it is important to depend on reliable sources for nutrition information.

Some reliable resources pertaining to food science and nutrition include information from these organizations:

- American Cancer Society
- American Diabetes Association
- American Dietetic Association
- American Heart Association
- Food and Drug Administration
- National Council Against Health Fraud, Inc.
- Texas Agricultural Extension Service
- Texas Department of Health and Human Services
- United States Department of Agriculture
- city health departments
- educational programs, including classroom instruction and textbooks
- professionals, such as registered dietitians, university nutrition professors, and home economists
- professional journals

Publications in professional journals as well as other periodicals provide current information on nutrition. Some of the professional journals include:

- *Critical Reviews in Food Science and Nutrition*
- *Food Science and Nutrition*
- *Journal of the American Dietetic Association*
- *Journal of Food Science*
- *Journal of Nutrition*
- *Journal of Nutrition Education*
- *Nutrition Today*
- *School Food Service Journal*

Along with the professional journals, there are a variety of newsletters that disperse reliable nutrition information. They are published by organizations, medical facilities, consumer agencies, and large corporations that have food science and nutrition related products. Some of the available food and nutrition newsletters include:

- *Consumer Reports Health Letter*
- *Dairy Council Digest* by the National Dairy Council
- *Food Insights* by the International Food Information Council
- *Food and Nutrition News* by the National Live Stock and Meat Board
- *Harvard Health Letter* published by the Harvard Medical School
- *Lifetime Health Letter* published by the University of Texas Health Science Center at Houston
- *Mayo Clinic Health Letter*
- *Nutrition and Health News* by the University of Texas Southwestern Medical Center at Dallas
- *Nutritional News and Views* published by Mead-Johnson
- *Tufts University Diet and Nutrition Newsletter* published by the Tufts University School of Nutrition
- *Nutrition Action Newsletter* published by the Center of Science in the Public Interest

Much nutrition information is disseminated through the media. For many Americans, the media is their greatest resource for current information. However, not all information conveyed through the media, especially that related to advertisements for various products, is completely accurate or reliable. This makes it difficult at times to distinguish between the reliable and the unreliable. The best assurance for verifying the accuracy of nutrition information is to confirm the information through one or more of the reliable resources available.

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Education
for
Self-Responsibility IV:

NUTRITION EDUCATION

GRADE

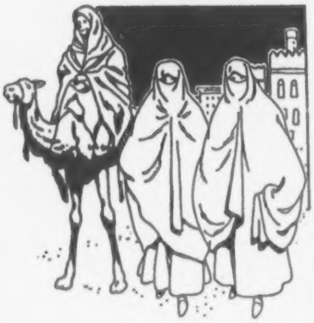
5

ESR IV

TEXAS EDUCATION AGENCY

Middle Eastern Americans in Texas

Grade Five



The cradle of civilization began in the Middle East centuries ago. The religions of Christianity, Islam, and Judaism began in this region and the countries of Egypt, Saudi Arabia, Turkey, Syria, Iraq, Iran, Lebanon, Israel, and Jordan are considered to be the center of the Middle East. The majority of immigrants that came to Texas from the Middle East were Lebanese and Syrians.

Much of the history of the Middle East is about large empires rising to power, ruling the land, and being conquered by other empires. It has been an area of turmoil for thousands of years due to disputes over boundaries of the countries. As each empire gained power, great intermingling of cultures took place, so food, customs, clothing, religion, and lifestyles were shared, exchanged, and modified and it is often difficult to determine the exact origin of particular customs.

The country of Iran is all that is left of the Persian Empire; however, ancient Persian customs of architecture, metalwork, and handwork in rugs and tapestries have been preserved. The Byzantine Empire was formed when the Roman Empire split and was responsible for retaining many of the accomplishments of the Ancient Greeks and Romans. The Empire of the Ottoman Turks greatly influenced the region with Turkish customs and foods.

The Arab Empire was formed by followers of the prophet Muhammed (Moslems), and extended from India across the Middle East and North Africa to Spain. The Arabic language is still spoken in parts of the Middle East where the Islamic faith (Moslem faith) is predominant. The Arab states include the countries of Egypt, Jordan, Iraq, Lebanon, Saudi Arabia, and Syria and are located in the area once called the *Fertile Crescent*, an area of rich land that stretched from the Persian Gulf to the Mediterranean.

Some of the ingredients basic to all Middle Eastern food include garlic, eggplant, olive oil, green pepper, lemon, and tomato. Both Judaism and Islam forbid their followers to eat pork; however, Middle Eastern Christians eat pork meat and its products. Lamb is the primary meat, but beef and camel are also eaten. Other foods of Middle Eastern countries include yogurt, olives, wheat, beans, rice, lentils, and chickpeas. A variety of seasonings are also used including allspice, cinnamon, cardamom, coriander, cumin, ginger, and hot peppers.

A significant number of Arabic-speaking immigrants from the areas of Mount Lebanon and Greater Syria (present day Lebanon and Syria) began arriving in Texas in the early 1880s. Most of these early immigrants were Christians, but Moslems began immigrating after 1945 due to conflicts in the Middle East. The census of 1920 reported that approximately thirty-five thousand Syrians and Lebanese were living in Texas, and today there are ten to fifteen thousand who can trace their ancestry to Syria and Lebanon.

Many of the Lebanese and Syrian immigrants settled in and around Austin, Houston, San Antonio, El Paso, Tyler, Canadian, and Port Arthur. They typically went from place to place selling small goods, and then opened businesses. The Jamails of Houston are the largest Lebanese family in Texas. They entered the produce business, and operated the *Jamail Brothers Food Market*; however, the name has been changed to *Jim Jamail and Sons Food Market*, which is now an exclusive gourmet food store in the United States.

Another Lebanese family, the Abraham Kazen family, settled in the Laredo area. After selling dry goods between San Antonio and Laredo, they expanded their operation up and down the Rio Grande River and eventually opened stores in San Marcos and Benavides.

Syrian and Lebanese immigrants and their descendants still celebrate their ancient traditions in a number of ways. Traditional dishes have reached a wide audience through festivals held in Austin, Beaumont, El Paso, Houston, San Antonio, and Waco, and a traditional social gathering called a ***sahria*** still takes place in churches, clubs, and homes throughout Texas. Sahrias provide an experience of ethnic heritage which includes food, dabke, a Lebanese circle dance, and music provided by a band of native instruments such as an oud (lute), a derbukki (hand drum), and the tambourine.

Fine Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify the functions of the nutrients as they relate to growth and health.

ASSESSMENT CRITERIA

Construct a mobile that lists the functions and sources of the nutrients.

ACTIVITIES & STRATEGIES

Explain that ***nutrients*** are nourishing substances found in food, and that they have specific functions in the body.

Review the information on the handout, "Nutrient Knowledge," with the students.

Instruct the students to create a *Nutrient Mobile* that represents the six classes of nutrients needed for body maintenance. Tell them to use the information provided on the handout, "Nutrient Knowledge," and to select a variety of art materials. Remind the students of the importance of a nutritionally balanced diet, and that they must also strive for a balanced mobile. Explain that they need to consider:

- the length of the pieces of string
- the weight of the items that will hang from the string
- the placement of the strings on the clothes hangers

After completion, ask some students to show and describe their mobiles to the class.

Display the mobiles in the classroom.

RESOURCES & MATERIALS

Handout: "Nutrient Knowledge"

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Art materials to make mobiles:
Clothes hangers
Magazines with food pictures
Poster board
String
Felt tip markers
Crayons
Colored tissue paper
Construction paper

TEACHER TIP

- **Groups of 2 - 3 students may do this activity to produce only one mobile through a team effort.**
- **Two class periods may be needed for this activity.**

ESSENTIAL ELEMENT

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to experiment with art materials to understand properties and develop manipulative skills.

NUTRIENT KNOWLEDGE

Nutrients are materials that the human body cannot supply in sufficient amounts to meet its needs. They are nourishing substances that can be found in food. Nutrients can be broken down into six classes. Each class of nutrients has specific functions in maintaining the health of the body.

PROTEINS

- help the body repair itself
- make tissue and blood cells
- provide energy

Examples of food containing **protein**: meat, poultry, fish, eggs, nuts, seeds, dry beans and peas

MINERALS

- regulate the body

Minerals are found in nearly all foods. Examples of a few **minerals** and some of their sources:

- Iron - meat, poultry, fish, bread
- Calcium - milk, cheese, and spinach

VITAMINS

- found in nearly all foods

Examples of a few **vitamins** and some of their sources:

Vitamin A - carrots, sweet potatoes, spinach, broccoli
Vitamin C - oranges, grapefruit, and potato
Vitamin D - sunlight and some fortified milk products
B vitamins - bread, cereal, grains, meat, and milk

CARBOHYDRATES

- provide energy for all body functions

Examples of food containing **carbohydrates**: bread, biscuits, muffins, barley, waffles, pancakes, rice, macaroni, spaghetti, noodles, fruits, and vegetables

FATS

- provide energy for all body functions
- carry fat-soluble vitamins A, D, E, and K

Examples of food containing **fats**: oil butter, margarine, mayonnaise, cheese, meat, whole milk, nuts, olives, avocado, coconut

WATER

- transports materials through the body
- helps the body eliminate waste

Fine Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Discuss family food preferences.
- Examine food traditions

ASSESSMENT CRITERIA

- Compare and contrast the food preferences and traditions of the class members.
- Categorize food preferences according to the food groups.

ACTIVITIES & STRATEGIES

Ask the students to define in their own words the terms *preference* and *tradition.*

Instruct two students to find these terms in a dictionary and read the definitions aloud to the class.

Explain that each family has traditions. The tradition may be as simple as eating pizza every Thursday night or a large celebration of a holiday. Food preferences influence our food choices each day.

Ask the students to name a traditional holiday or occasion celebrated in their home. List some of the answers on the chalkboard. Next to this list, draw two columns with the headings *Occasions, Foods,* and *Food Groups.*

Ask the students to name a food they associate with each of the occasions named and write the food and the corresponding food group in the appropriate columns. (See the opposite column.) Use "Appendix C: A Pattern for Daily Food Choices" as a guide to categorize the foods.

Lead a discussion on holidays or occasions, food traditions, and preferences by comparing and contrasting the holidays and foods named by the students.

Instruct the students to create a collage to depict all aspects of one of their favorite holidays or occasions and the food preferences associated with that occasion.

After completion, ask some students to show and describe their collages to the class.

Display the collages in the classroom or the cafeteria.

RESOURCES & MATERIALS

"Appendix C: A Pattern for Daily Food Choices"

Art materials to make collages:
Construction paper or tagboard
Magazines
Scissors
Glue

Occasions	Foods	Food Groups
Friday night football	Hamburger	Meat Bread Vegetables
Christmas	Ham	Meat
Thanksgiving	Turkey Dressing	Meat Bread

TEACHER TIP

Two class periods may be needed for this activity.

In advance, ask the cafeteria manager for permission to display artwork in the cafeteria.

ESSENTIAL ELEMENT

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to express individual ideas, thoughts, and feelings in simple media including drawing, painting, printmaking, constructing and modeling three-dimensional forms, manipulating fibers, and exploring photographic imagery.

LESSON OBJECTIVES

- Distinguish between nutrition facts and fallacies.
- List the functions of dietary fiber in the body.

ASSESSMENT CRITERIA

- Identify foods that are high in fiber.
- Explain the benefits of fiber in the diet.
- Examine the health claims about dietary fiber.

ACTIVITIES & STRATEGIES

Ask students to give their definition of ***fiber***: a group of substances found in plants that the body's digestive tract is unable to break down.

Explain the difference between soluble fiber and insoluble fiber.
- Soluble fiber dissolves in water. It is found in fruits, vegetables, dried beans, and peas.
- Insoluble fiber cannot be dissolved in water. It is found in whole-grain products, skins of fruits, and vegetables.

Distribute the handout, "Fiber Facts." Ask various students to read different sections to the class.

Conduct a tasting party so that students can taste some high-fiber foods. Provide dips made with plain, low-fat yogurt to eat with the fruits and vegetables.

Encourage students to try one bite of each of the high-fiber foods. Ask the students if there were any of the foods that they had never tried before. If so, ask them to name these foods and specify the ones that they liked.

RESOURCES & MATERIALS

Handout: "Fiber Facts"

"Changing the Course: Upper Elementary Curriculum," American Cancer Society

Suggested foods for tasting party:

bran muffins
whole wheat bagel
whole-grain cereals
celery sticks
carrot sticks
cauliflower
broccoli
oranges
raisins
bananas
apples
dried figs
popcorn

Low-fat dips for fruits and vegetables
Serving trays
Bowls to serve the dips
Small plates
Napkins

In advance, arrange with the cafeteria manager for the cafeteria to provide some high-fiber foods for the tasting activity.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize nutritional concerns of adolescents and identify ways to care for the principal body systems.

FIBER FACTS

Benefits of Dietary Fiber

- **Promotes regularity.** The fiber absorbs water which helps the body eliminate waste products quickly and easily.
- **Helps to prevent cavities.** The coarse texture of raw fruits and vegetables provides a cleansing action that helps remove food particles from the teeth.
- **Helps to prevent diverticulitis.** A condition in the large intestines characterized by pockets that develop in weak areas of the intestinal wall which allows food residues to collect.

Health Claims

Many health claims have been made concerning the benefits of fiber. Researchers are trying to prove some of the advertised benefits of fiber. The following health claims have some validity, but need further research before scientific conclusions can be made.

- **Heart disease.** Researchers think that fiber binds to cholesterol and helps prevent the fatty deposits. Fiber in fruits and cereals (soluble fiber) does a better job of reducing blood cholesterol than insoluble fiber. Oat bran is not as effective in reducing blood cholesterol as it is advertised.

- **Cancer prevention.** Colon cancer is a disorder of the digestive tract that has been linked to low-fiber diets. Possible explanations include:
  - Fiber dilutes cancer-causing agents.
  - Fiber helps food to move through the colon faster, decreasing the time it is exposed to cancer-causing agents.
  - A high-fiber diet has less cancer-causing agents.

- **Weight loss.** High-fiber foods are beneficial for weight control. Foods that are good sources of fiber are generally good sources of nutrients. Most high-fiber foods are also lower in fat and calories. High-fiber foods take longer to chew which helps you to eat slower and feel full faster. Fiber supplements that promote rapid weight loss do not provide a long-term solution to weight control.

Food sources

Good sources of fiber include most of the foods in the Fruits Group, the Vegetables Group, and whole-grain products from the Bread-Cereal Group. From the Meat Group, only peanuts and dry beans and peas are good sources of fiber. There are no fiber-rich foods in the Dairy Group.

General guidelines

Consuming fiber supplements is generally unnecessary when the diet includes fiber-rich foods.

- Eat a variety of fiber-rich foods each day.
- Include fruits and vegetables that are raw and with the skins on.
- Choose fresh fruit instead of juice whenever possible.
- Eat more whole-grain products like bread and cereal.

Fiber plays an important housekeeping role in the body. Diets need to provide enough cleaning action to maintain the body, but not so much that valuable nutrients are washed away.

LESSON OBJECTIVE

List the functions of dietary fiber in the body.

ASSESSMENT CRITERIA

Categorize foods according to fiber content.

ACTIVITIES & STRATEGIES

Discuss the following information regarding fiber in the diet.

- Foods containing ***carbohydrates*** provide energy for the body. They are from plant sources.
- There are two types of carbohydrates: simple and complex.
- *Fiber* is the part of plants that people cannot digest; it is found in vegetables, fruits, and grains. Fiber is a complex carbohydrate.

Display and review the transparency, "Dietary Fiber and Whole Grains." Discuss the parts of the whole wheat kernel (listed in the opposite column) and the functions of fiber in the body.

Point out the importance of whole grains in the diet.

- Foods made from whole grains are good sources of fiber.
- Whole grains contain all the parts of the kernel that can be eaten.
- Foods like whole wheat breads, whole wheat cereals, and popcorn are whole-grain foods.
- Vegetables, fruits, dry beans, dried peas, seeds, and nuts are also good sources of fiber.

Tell the students to make two columns headed by *Fiber-rich foods* and *Fiber-poor foods.* Write the following list of foods on the chalkboard and instruct the students to categorize the foods according to their fiber content and list them in one of the columns: peanuts, apples, bacon, whole wheat toast, celery, milk, cheese, whole-grain cereal, strawberries, sunflower seeds, hamburger meat, cucumbers, pinto beans, fried chicken, popcorn, honey, white bread, butter, hot dogs, and oranges.

Display white flour and whole wheat flour. Allow students to touch and see the two samples. Discuss the similarities and differences.

Ask students to review the list of fiber-rich and fiber-poor foods. Discuss ways they can add fiber to their diet.

RESOURCES & MATERIALS

Transparency: "Dietary Fiber and Whole Grains"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Whole wheat flour
White flour
Two plates

Parts of the whole wheat kernel:

- There are three parts to a single grain of wheat: bran, endosperm, and germ.
- The ***bran*** is the outer part that includes the husk which is a source of vitamins, minerals, and fiber.
- The ***endosperm*** is the main part of the grain. It is a source of carbohydrates. White flour is made from the endosperm and excludes the other two parts of the grain.
- The ***germ*** is a small bud of the new plant found deep inside the grain. It is a source of vitamins, minerals, and fat.

ANSWER KEY

Fiber-rich foods	**Fiber-poor foods**
peanuts	**bacon**
apples	**milk**
whole wheat toast	**cheese**
celery	**hamburger meat**
whole-grain cereal	**ice cream**
strawberries	**fried chicken**
sunflower seeds	**honey**
cucumbers	**white bread**
pinto beans	**butter**
popcorn	**hot dogs**
oranges	**sausage**

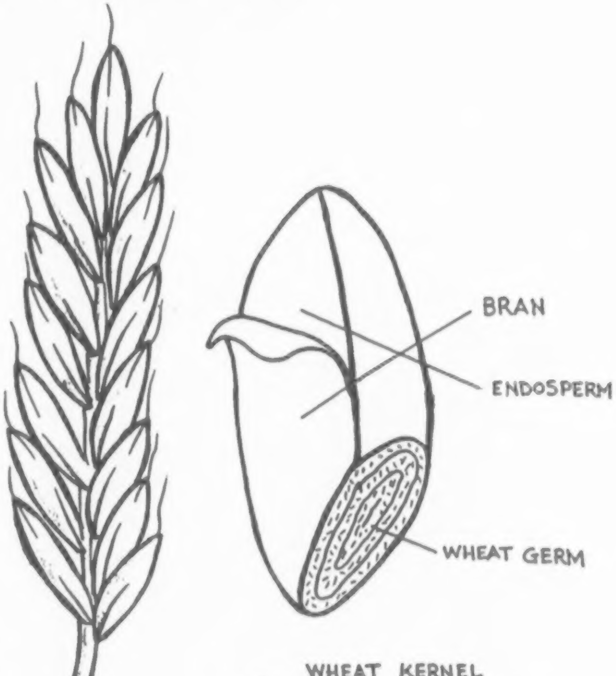
ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize nutritional concerns of adolescents.

NAME ______________________________ **DATE** ____________________

Dietary Fiber and Whole Grains

Parts of the Whole Wheat Kernel



WHEAT KERNEL
ENLARGED CROSS SECTION

Functions of Fiber in the Diet

- Keeps contents of the intestines moving and prevents constipation. **Constipation** is a failure of regular bowel movements.
- Helps reduce the risk of colon cancer by allowing food to pass quickly through the digestive tract.
- Stimulates muscles of the digestive track. If these muscles are in good shape, diverticulosis may be prevented. **Diverticulosis** is caused when bulging pockets form on the intestinal wall and become inflamed.
- Gives a feeling of fullness by absorbing water. This helps people feel full longer which contributes to healthy eating and weight control.

LESSON OBJECTIVE

Explain the importance of safe handling of food.

ASSESSMENT CRITERIA

Analyze the effect of temperatures on the growth of microorganisms.

Health Grade 5

5

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Discuss the following information about food-borne illness:

- A ***food-borne illness*** is an illness caused by eating food containing harmful microorganisms, poisins, or toxins.
- An upset stomach can be caused by the flu, but can also be food-borne illness.
- Microorganisms and enzymes cause food to spoil.
- ***Enzymes*** cause foods to lose flavor and color by speeding up chemical changes.
- ***Microorganisms*** are organisms that are so small that they can only be seen through a microscope. They include ***molds***, ***yeasts***, and ***bacteria***.
- Microorganisms grow when conditions are favorable. They need food, moisture, and carriers like insects, people, animals, and objects. Most need warm temperatures.
- ***Molds*** are furry-looking fungi in a variety of colors. They can grow on almost any food, at almost any storage temperature, and under almost any conditions (acidic or nonacidic, salty or sweet). Some molds will grow on food in the refrigerator if it is kept too long.
- ***Yeasts*** are fungi that require sugar, moisture, and warm temperature for growth. Yeast multiply by sending out buds. They can cause some food to ferment and to spoil.
- ***Bacteria*** are small, single-cell organisms that can live anywhere people can. They thrive in a warm, moist environment that is either neutral or slightly acidic. Bacteria are more commonly involved in cases of food-borne illness than yeasts or molds. Bacteria cause food to spoil.
- Bacteria in small amounts can usually be handled by the body, but large amounts can cause illness and death.
- Storing food for the right amount of time in the correct temperature can prevent food-borne illness.
- Temperatures higher than 140° F kill most microorganisms and enzymes.
- Cold temperatures slow down microorganisms and enzymes, but fail to kill the microorganisms or inactivate the enzymes.

Distribute and review the worksheet, "Storage Temperature for Food."

RESOURCES & MATERIALS

Worksheet: "Storage Temperature for Food"

"Instructors Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Scissors
Glue

Answer Key (Top to Bottom)

1. Temperatures reached while cooking destroy most enzymes and microorganisms. Bacteria will start to grow however, when food has cooled even slightly.
2. Temperatures in this range are too low to kill most enzymes and microorganisms. Food that was hot but left to cool in a room reaches this temperature quickly. At this point bacteria start to grow.
3. This is the danger zone. Microorganisms will grow very rapidly. This zone is room temperature. Fresh or cooked food should not be stored at this temperature.
4. At this range, microorganisms will grow, but not as rapidly as the above range. Make sure your refrigerator temperature is between 36° F and 40° F.
5. Some microorganisms can grow at this range, though it slows down most. Storage of food at these temperatures should last only a few days.
6. This range represents freezing temperatures. Microorganism growth slows down a great deal. They will grow more slowly at the lower temperatures.

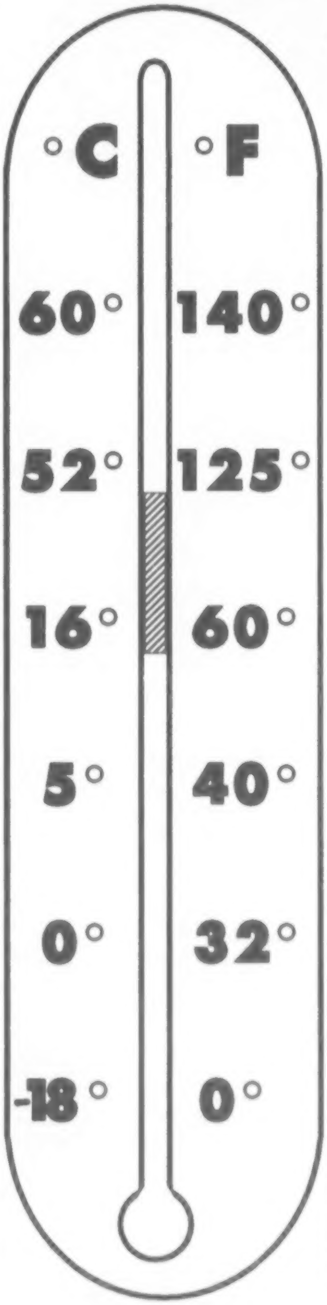
ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize nutritional concerns of adolescents.

NAME ______________________________ DATE ________________

STORAGE TEMPERATURE FOR FOOD

Instructions: Cut out the six statements at the bottom of the page. Glue each one next to the corresponding place on the thermometer.



	PICTURES
1.	
2.	
3.	
4.	
5.	
6.	

Temperatures reached while cooking destroy most enzymes and microorganisms. Bacteria will start to grow however, when food has cooled even slightly.

Temperatures in this range are too low to kill most enzymes and microorganisms. Food that was hot but left to cool in a room reaches this temperature quickly. At this point bacteria start to grow.

This range represents freezing temperatures. Microorganism growth slows down a great deal. They will grow more slowly as the temperature gets lower.

This is the danger zone. Microorganisms will grow very rapidly. This zone includes room temperatures. Fresh or cooked food should not be stored at this temperature.

At this range, microorganisms will grow, but not as rapidly as the above range. Make sure your refrigerator temperature is between 36° F and 40°F.

Some microorganisms can grow at this range, though it slows down most. Storage of food at these temperatures should last only a few days.

LESSON OBJECTIVES

- Make wise food choices as part of self-responsibility for health and wellness.
- Classify foods using a food grouping system.

ASSESSMENT CRITERIA

- Name the major nutrients provided by food sources in each food group.
- Apply dietary guidelines when making food choices.
- Classify foods according to the five food groups.

ACTIVITIES & STRATEGIES

Present to the students the five food groups and the main nutrients shown in the opposite column.

Dietary guidelines that will help you to make wise food choices:

- Eat a variety of foods. The body needs more than 40 different nutrients for good health. These nutrients come from eating a variety of foods from the five major food groups: vegetables, fruits, grain products, milk and milk products, and meats and meat alternatives.
- Choose a diet low in fat, particularly saturated fat and cholesterol. Higher levels of saturated fat (primarily fat from animal sources) and cholesterol increase the risk of heart disease. Fat contains twice the calories as an equal amount of carbohydrates or protein.
- Choose a diet with plenty of vegetables, fruits, and whole-grain products. These provide dietary fiber and other food components linked to good health.
- Use sugar and salt in moderation. Foods that contain large amounts of sugar are usually low in nutrients. Sugar also contributes to tooth decay. A diet high in salt may lead to high blood pressure.

Distribute and review the worksheet, "What's in a Cheeseburger," with the students.

Discuss the students' choices to make the cheeseburger healthier. Discuss other foods the students could modify and make healthier (pizza, sandwiches, salads).

RESOURCES & MATERIALS

Worksheet: "What's in a Cheeseburger?"

Food Group	**Nutrients**
Vegetables	Vitamins A and C Carbohydrates
Fruits	Vitamins C and A Carbohydrates
Breads, Cereals, Rice, and Pasta	Carbohydrates Protein Thiamin (B1)
Milk, Yogurt, and Cheese	Calcium Riboflavin Protein
Meat, Poultry, Fish, Dry beans and Peas, Eggs, Nuts, and Seeds	Protein Iron

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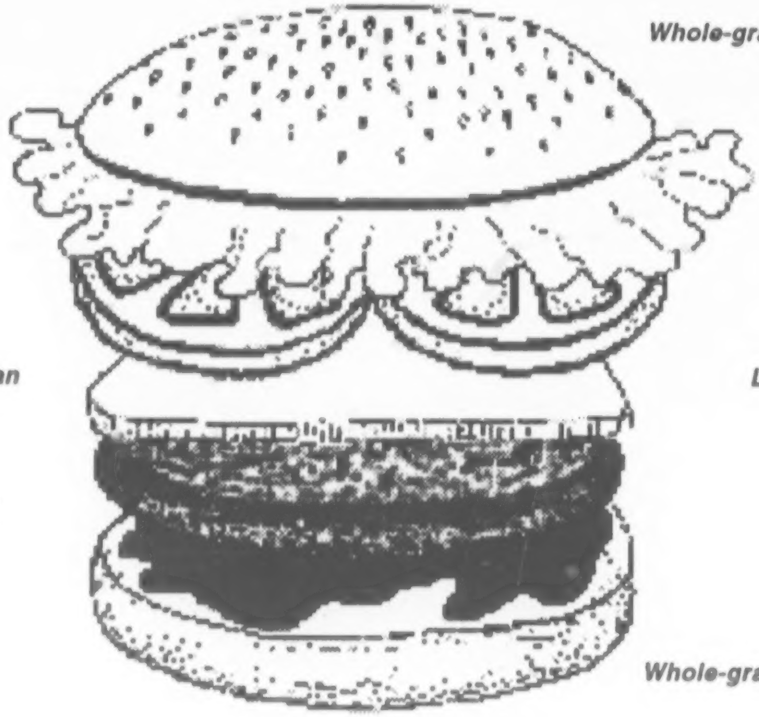
ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize nutritional concerns of adolescents.

NAME ______________________________ **DATE** ______________

What's in a Cheeseburger?

This ? *or* *This ?*


Plain Bun
Whole-grain English Muffin
Lettuce
Leafy Lettuce
Tomato
Tomato
Processed American Cheese
Low-fat Mozzarella Cheese
Hamburger Patty
Lean Hamburger Patty
Mayonnaise
Mustard
Plain Bun
Whole-grain English Muffin

DIRECTIONS:

For the most nutritious cheeseburger, which ingredients would you select? Circle them above. On the chart below, list the ingredients you chose for the cheeseburger, the food group each represents, and the main nutrient(s) provided by that food.

Cheeseburger Ingredients	Food Group	Main Nutrient(s)
1. ______________	______________	______________
2. ______________	______________	______________
3. ______________	______________	______________
4. ______________	______________	______________
5. ______________	______________	______________

Health **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Make wise food choices using the pattern for daily food choices.
- Explore the development of attitudes toward food.

ASSESSMENT CRITERIA

Create a sandwich that incorporates foods from several food groups.

ACTIVITIES & STRATEGIES

Display the transparency, "Appendix C: A Pattern for Daily Food Choices," and refer to it while you discuss the following information regarding food choices:

- To ensure nutritional fitness, choose foods according to the pattern for daily food choices.
- This guide aids in selection of the right kinds and amounts of foods.
- The pattern lists five groups of foods needed every day to maintain health.
- The pattern lists the size and number of servings needed daily from each group.
- A variety of foods from each food group will provide the nutrients needed for good health.

Instruct the students to invent and write a description of a sandwich that uses something other than white bread. For example, they might choose a whole wheat hamburger bun, a tortilla, a bagel, English muffin, or pita bread. They are to make sure that they include one serving from four of the five food groups found on the pattern.

Tell students to complete the meal with a food from the group they have not represented in the sandwich, and decide on creative names for their sandwiches.

Ask students to describe and give the name of their sandwiches to the class, and encourage discussion about each sandwich.

Remind students that eating healthy can be fun and creative.

RESOURCES & MATERIALS

Transparency: "Appendix C: A Pattern for Daily Food Choices"

Ask the cafeteria manager if he or she can either prepare the winning sandwich or plan a school lunch menu with it.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to recognize nutritional concerns of adolescents.

Health **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices at snack time.

ASSESSMENT CRITERIA

Analyze the nutritional characteristics of snack foods.

ACTIVITIES & STRATEGIES

Discuss the information listed below and in the next column with the students.

- Studies have shown that nearly 25 percent of daily calories consumed by teenagers come from snacks.
- Snacks need to be nutritious because they provide so much of the daily food intake.
- It is wise to think about what is eaten during the day and use snacks to fill the deficiency in the day's intake of nutritious foods.

Discuss the healthy snack foods that students enjoy and the times of day they are most likely to eat snack foods.

Review the handout, "Appendix C: A Pattern for Daily Food Choices."

Instruct the students to listen to the scenario and answer the following question on a piece of paper, then discuss their answers.

> *Monique was very hungry when she came home from school. She had the choice of eating a doughnut or a burrito. She chose the burrito. She spread beans on a tortilla, and then she added chopped lettuce and tomatoes, grated cheese, and hot sauce.*

What requirements of the Pattern for Daily Food Guide were met when Monique ate the burrito for a snack? (one serving from the Breads, Cereals, Rice, and Pasta group; a food from the Meat, Poultry, Fish, Dry beans and Peas, Eggs, Nuts, and Seeds group; two foods from the Vegetables group; and one food from the Milk, Yogurt, and Cheese group)

What are other hearty snacks that can help meet the nutritional requirements? (Vegetable pizza and tacos, but limit the cheese, sausage, and pepperoni because of the fat content.) Why was Monique's choice of a burrito over a doughnut the wiser choice? (It provided necessary nutrients and not empty calories.)

RESOURCES & MATERIALS

Handout: "Appendix C: A Pattern for Daily Food Choices"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

General information regarding snacks:

- Nutritious food choices include fruit juices, fruits, whole grain breads and cereals, cheese, or peanuts.
- Non-nutritious food choices are usually empty-calorie foods like soft drinks, candy, or doughnuts.
- Snacking on empty-calorie foods while studying or working may add body weight and usually does not provide nutrients needed to complete tasks efficiently and easily.
- High-calorie snacks are readily available everywhere which makes it too easy to buy and eat them without thinking of the consequences.
- Older children have greater control over their diets than younger children do. This often leads to poor nutrition. Good nutrition is one of the responsibilities pre-adolescents must assume as they become adults.
- Learning to choose food wisely early in life can help prevent certain diseases such as heart disease and cancer.

In advance, ask the food service director if a computer program is available that can provide a nutritional analysis of the foods in this lesson.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to identify daily practices that promote self-concept, and recognize nutritional concerns of adolescents.

LESSON OBJECTIVE

Explore the influence of food advertising and the media on food habits.

ASSESSMENT CRITERIA

Evaluate a food advertisement found in a magazine and assess its influence on the consumer.

Health **Grade 5**

5

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Discuss the following statements:

- People need to eat a variety of foods in order to maintain good health.
- Making wise food choices is important because food gives the body energy and nutrients.
- We make choices about the foods we eat every day.
- Some factors that influence our food choices are:
  - ° advertising
  - ° taste
  - ° family
  - ° friends
  - ° availability
  - ° cost
  - ° culture
- An advertiser's goal is to influence people to buy a particular food product.
- Advertisements aimed at children usually deal with cereals, candy, and snacks; nutritious food is rarely advertised.

Write the following five categories on the chalkboard: candy, carbonated soft drinks, cereals, chips, and cookies.

Ask the students to help you list some popular name brand items under each heading.

Ask the students to describe the advertisements associated with a few of the listed items. What specific things in these ads make you want to buy the product?

Present to the students the following information on Saturday morning commercials:

- 62% of the commercials are for sugars, desserts, soft drinks, and other non-nutritious snacks.
- 20% - cereals, breads, and pastas
- 2% - fruits or vegetables

Give each student an opportunity to select an advertisement from a magazine, or use a commercial they have seen, and instruct them to complete the worksheet, "Please Buy and Try."

Help students design an advertising campaign to promote school breakfast or lunch. Coordinate with the art and/or music teacher if students want to include posters or jingles.

RESOURCES & MATERIALS

Worksheet: "Please Buy and Try"

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Scissors
Glue
Magazines

TEACHER TIP

Post the ads in the hallway and/or have the ads read over the school's public address system.

In advance, ask the cafeteria manager to explain the benefits of the school breakfast and lunch programs and to post the ads in the cafeteria.

ESSENTIAL ELEMENT

Health. Health-related concepts and skills that involve interaction between individuals. The student shall be provided opportunities to recognize benefits and limitations of advertising as it relates to selection of health services, products and practitioners.

NAME ______________________________ **DATE** ________________

Please Buy and Try

Directions
Locate a food advertisement in a magazine and refer to it when answering the following questions:

1. Describe the advertisement you have chosen.

2. What part of the ad caught your attention—its color, design, pictures?

3. What age group do you think this advertisement would appeal to?

4. Why do you think the company is advertising this product?

5. Have you ever tasted this food?

6. Do you believe that if you tried this food, you would think it is as good as the advertisement is trying to make it appear? Why or why not?

7. What food product have you tried because you became interested in it while viewing its advertisement on television?

8. Was it as good as you had hoped it would be?

9. Why do you think that making all of your food choices based upon advertisements is not the most healthy thing to do? (Remember that food companies advertise because they want you to buy their products.)

10. Please attach the advertisement you found to the back of this worksheet.

LESSON OBJECTIVES

- Discuss nutritional needs of the pre-adolescent and adolescent.
- Explain the role of nutrition and physical fitness in maintaining good health.

ASSESSMENT CRITERIA

- Discuss the importance of the development of nutritious eating habits for adolescents.
- Classify foods as either empty-calorie or nutritious foods.

ACTIVITIES & STRATEGIES

Explain that the adolescent's body is growing at a rapid rate, so nutritious eating habits during these years can contribute to a healthy adult life.

Discuss that adolescents are vulnerable to poor nutrition due to a variety of reasons:
- peer pressure
- junk food availability
- lack of time
- concern about weight control

Explain that the following nutrients are often lacking in the adolescent diet:
- calcium
- iron
- vitamin A
- vitamin C

Empty-calorie foods are foods that are high in calories and supply little nutrition. When empty-calorie foods are eaten:
- the body is not supplied with nutrients to maintain health
- you may feel tired and irritable due to a lack of nutrients
- inadequate amounts of nutrients may prevent you from performing at your best.

Examples of empty-calorie foods are:
- candy
- soft drinks
- chips

Distribute the worksheet, "Nutrition Bingo." Read the instructions with the students. Call out items on the list of foods provided on the worksheet until the first student wins at bingo.

Health **Grade 5**

5

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Worksheet: "Nutrition Bingo"

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Pens or pencils for each student
Colored markers for each student

ANSWER KEY

Nutritious Foods	Empty-calorie foods
apple	candy bar
lean beef	potato chips
low-fat frozen yogurt	grape jelly
carrot sticks	soft drink
skim milk	pie
mozzarella cheese	doughnut
baked chicken	chocolate chip cookies
tuna fish	corn chips
stir-fry vegetables	chocolate syrup
baked pretzels	butter or margarine
orange juice	thousand island dressing
baked potato	mayonnaise
boiled egg	toaster pastry
chef salad	eclair
dried apricots	jelly beans
tangerine	brownies
hot oatmeal	lollipop
peanut butter	
whole-grain crackers	
raisins	

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize nutritional concerns of adolescents.

NAME ______________________________ **DATE** ____________________

Nutrition Bingo

- Choose empty-calorie foods or nutritious foods from the list below and write them in the squares of the game grid below.
- Listen carefully as your teacher calls out the food names.
  - If the teacher calls a nutritious food that you have written on your grid, draw an N on the name of that food.
  - If the teacher calls an empty-calorie food, draw an E on the name of that food.
- The game ends when all the blocks are marked correctly by a player. The first player to do so should call out, *Nutrition Bingo!*

(Your teacher has a list to verify the nutritious and empty-calorie foods.)

chef salad
mayonnaise
toaster pastry
eclair
dried apricots
tangerine
hot oatmeal
jelly beans
peanut butter

lollipop
apple
candy bar
lean beef
low-fat frozen yogurt
carrot sticks
potato chips
grape jelly
soft drink

mozzarella cheese
pie
doughnut
thousand island dressing
whole-grain crackers
raisins
brownies
butter or margarine
boiled egg
chocolate chip cookies

baked chicken
tuna fish
stir-fry vegetables
corn chips
chocolate syrup
baked pretzels
orange juice
baked potato
skim milk

LESSON OBJECTIVE

Examine the effects of poor dietary habits.

ASSESSMENT CRITERIA

Analyze ways to reduce the amount of sugar in the diet.

ACTIVITIES & STRATEGIES

Invite a dentist to be a guest speaker to discuss the effects of sugar on tooth decay and methods of prevention.

Ask the students the following questions:

- If sugared foods are eaten, what can you do soon after eating to help prevent tooth decay?
  (Brush your teeth. If this is not possible, wash out your mouth with water or drink water after eating the food to wash some of the sugar from the teeth.)
- How long does sugar stay in the mouth?
  (Twenty minutes)

Brainstorm to identify food items with high-sugar content.

Ask the students to list the foods they ate yesterday. Circle the foods that have a high-sugar content.

Display the transparency, "Healthy Food Choices." Review and discuss it with the students.

Instruct the students to list ways that they could improve their diets by substituting foods with less sugar for high-sugar foods. Ask the students to share their ideas and discuss them as a class.

RESOURCES & MATERIALS

Transparency: "Healthy Food Choices"

Guest speaker: Dentist

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Overhead projector

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize nutritional concerns of adolescents.

Healthy Food Choices

Eat these foods:	Instead of these foods:
popcorn toast pretzels soda crackers	cookies doughnuts pies cakes candy
fresh fruits fresh vegetables water-packed fruits	jellies sugar-glazed vegetables fruits packed in syrup
low-fat milk cheese cubes low-fat plain yogurt cottage cheese	whole milk pudding ice cream shakes sherbets
nuts eggs peanut butter some bean dips	meat with sugar glazes or barbecue sauce candy coated nuts
water club soda with lemon or lime carbonated flavored water sugar-free gum	tea or soft drinks with sugar gum

LESSON OBJECTIVE

Distinguish between reliable and unreliable sources of nutrition information.

ASSESSMENT CRITERIA

- Identify a variety of nutrition information resources.
- Investigate local resources.

ACTIVITIES & STRATEGIES

Tell the students that most communities have several places to acquire nutrition and health information.

Ask the students to name some nutrition resources in their own communities. As the students give suggestions, write them on the chalkboard.

Add the following list of resources:
1. School district food service department
2. School nurse
3. Dietitian
4. Doctor or nurse
5. Pharmacist
6. Hospitals or health clinics
7. Supermarkets (Some have color-coded shelf tags to reveal nutrition information about the product.)
8. Libraries (public, school, education service center)
9. County Extension Agent (Listed as the County Extension Service under county listings in the telephone book.)
10. Local chapter of the American Dietetic Association
11. Local chapter of the American Red Cross
12. Local chapter of the American Heart Association
13. Local chapter of the American Diabetes Association
14. Local chapter of the American Cancer Society
15. Associated Milk Producers
16. Texas Department of Agriculture
17. Texas Department of Human Services - Nutrition Education Training (N.E.T.)
18. National resources (Many have 800 numbers as in "Appendix I: Health Hotline of Agencies and Organizations.")

Discuss with the students that some resources may not be reliable for nutrition information such as:
- magazine articles and books
- untrained health and fitness facility employees
- old-folk tales
- friends' opinions

RESOURCES & MATERIALS

Appendix I: "Health Hotline of Agencies and Organizations"

TEACHER TIP

Assignments could be made to write or call toll-free agencies to acquire free information.

ESSENTIAL ELEMENT

Health. Health-related concepts and skills that affect the well-being of people collectively. The student shall be provided opportunities to identify locally available volunteer health agencies.

LESSON OBJECTIVE

Describe the relationship of food to energy, growth, and health.

ASSESSMENT CRITERIA

Identify the six classes of nutrients, their functions, and food sources.

Language Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Discuss the following information with the students regarding our bodies' need for food:

- The food a person puts into their body affects how they feel and what they do.
- If a person does not eat healthy foods, they may not have enough energy for work and play.
- The body's ability to resist disease or illness is directly related to nutritional health. The well-nourished body is better prepared to fight disease and keep itself healthy.
- It is very important that people eat a variety of foods in order to get the right amount of nutrients. Nutrients are materials that your body cannot supply in sufficient amounts to meet its need, but these nutrients can be supplied by food. Nutrients are nourishing substances that have specific functions for maintaining the body's health.
- Nutrients can be broken down into six classes: proteins, carbohydrates, fat, vitamins, minerals, and water.

Distribute and review the worksheet, "Nutrient Pictures," and the handout, "Nutrition Overview," with the class. Ask students to participate in reading the information in the handout.

Instruct the students to use the information in the handout to complete the worksheet.

After completing the worksheet, ask students to share their pictures with the class.

RESOURCES & MATERIALS

Worksheet: "Nutrient Pictures"

Handout: "Nutrition Overview"

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

ESSENTIAL ELEMENT

Language arts. Reading. Applying reading skills to a variety of practical situations. The student shall be provided opportunities to use graphic sources for information such as tables and lists, charts and graphs, maps and globes, timelines, pictures and diagrams, scale drawings, transportation schedules.

NAME ____________________ **DATE** ____________

Nutrient Pictures

Instructions: *Using the information in the handout, "Nutrition Overview," draw a picture that best describes each of the six classes of nutrients. Write the name of the nutrient, its function in the body, and some food sources of that nutrient on the lines below your drawing.*

Nutrient: ____________________
Function: ____________________
Source: ____________________

Nutrient: ____________________
Function: ____________________
Source: ____________________

Nutrient: ____________________
Function: ____________________
Source: ____________________

Nutrient: ____________________
Function: ____________________
Source: ____________________

Nutrient: ____________________
Function: ____________________
Source: ____________________

Nutrient: ____________________
Function: ____________________
Source: ____________________

NAME ______________________ **DATE** ______________

Nutrition Overview

Nutrients are materials that the human body cannot supply in sufficient amounts to meet its need. They are nourishing substances that can be found in food. Nutrients can be broken down into six classes. Each has specific functions in maintaining the body.

Proteins • help the body repair itself • make tissue and blood cells • provide energy	Examples of food containing **PROTEIN:** **meat, poultry, fish, eggs, nuts, seeds, dry beans and peas**
Carbohydrates • provide energy for all body functions	Examples of food containing **CARBOHYDRATES:** **bread, biscuits, muffins, barley waffles, pancakes, cereal, rice, macaroni, spaghetti, noodles, fruits, vegetables, corn, potatoes**
Fats • provide energy for all body functions • carry fat-soluble vitamins A, D, E, and K	Examples of food containing **FATS:** **oil, butter, margarine, nuts, olives, mayonnaise, cheese, meat, whole milk, avocado, coconut**
Vitamins • help the body function properly	**VITAMINS** are found in nearly all foods. Examples of a few vitamins and some of their sources: • **Vitamin A - carrots, sweet potatoes, spinach, broccoli** • **Vitamin C - oranges, grapefruit, potato** • **Vitamin D - sunlight & some fortified milk products** • **B vitamins - bread, cereal, grains, meat and milk**
Minerals • regulate the body	**MINERALS** are found in nearly all foods. Examples of a few minerals and some of their sources: • **Iron - meat, poultry, fish, bread** • **Calcium - milk, cheese, spinach**
Water • transports materials through the body • helps the body eliminate waste	

ESR IV
TEXAS EDUCATION AGENCY

Language Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Distinguish between nutrition facts and fallacies.

ASSESSMENT CRITERIA

Realize the importance of evaluating nutritional facts.

ACTIVITIES & STRATEGIES

Discuss the terms *fallacy*, *myth*, and *fable*:
- Fallacy—a deception, a false idea
- Myth—a traditional story that serves to explain a belief, people, or practice
- Fable—a fictitious story intended to enforce a useful truth; a story in which animals speak and act like human beings

Some food myths or fallacies include:
- Eating fish will make you smarter.
- Eating fish and milk at the same meal can make you sick.
- Chocolate causes acne.
- Onions can cure a cold.

Instruct the students to:
- Research a particular food.
- Write a fable with foods that speak and act like humans.
- Include a fallacy associated with the food.
- Following the fable, write one paragraph that includes nutrition facts that disprove the fallacy.

Give the students the opportunity to present their fables to the class.

RESOURCES & MATERIALS

Encyclopedias
Reference books

ESSENTIAL ELEMENT

Language arts. Writing. Using a variety of techniques to select topics and to generate material to write about those topics. The student shall be provided opportunities to use ideas and information from sources other than personal experiences for writing.

Language Arts **Grade 5**

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TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

Compose an essay stating the reasons for choosing a nutritionally balanced meal.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:

- To stay healthy, the body needs a variety of nutritious foods.
- Foods containing substantial amounts of vitamins and minerals need to be consumed so that the body can function properly.
- It is suggested that Americans reduce their intake of foods high in fat, sugar, salt, and cholesterol.
- The individual is responsible for his or her food choices.
- What is eaten will affect the body's energy level, health, and growth.
- School breakfasts and lunches must offer nutritionally balanced meals.

Instruct the students to compose an essay using information from the classroom discussion. The students should think about the following scenario when they write their essays:

> *Terry is about to make a decision about what she will eat for lunch. She can either eat a nutritionally balanced meal in the cafeteria, or she can eat the two food items she placed in her backpack this morning, a bag of potato chips and a cola.*

The chips are high in fat and salt, and the cola is high in sugar. Chips and cola alone do not provide the essential nutrients. However, if Terry eats regular, well-balanced meals, these foods can be eaten occasionally.

Students should write their essays as if the writer were Terry's body. Let them choose to write from different perspectives. Some students should write as if Terry chose the nutritionally balanced breakfast and others write as if Terry chose the cola and chips.

After the essays have been turned in, read some of them and let the class discuss the differences in how Terry felt after eating a nutritious breakfast and a non-nutritious snack.

RESOURCES & MATERIALS

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

TEACHER TIP

Be prepared to hear negative stories about school lunches.

ESSENTIAL ELEMENT

Language arts. Writing. Using a variety of techniques to select topics and to generate material to write about those topics. The student shall be provided opportunities to use ideas and information from sources other than personal experiences for writing.

LESSON OBJECTIVE

Make wise food choices using the pattern for daily food choices.

ASSESSMENT CRITERIA

- Give examples of major food sources from each of the five food groups.
- Describe a nutritionally balanced diet.

ACTIVITIES & STRATEGIES

Display the transparency, "Appendix C: A Pattern for Daily Food Choices." Ask students to review the transparency while you distribute the worksheet, "Roundup A Pattern," to everyone.

Read the worksheet instructions and assist the students in unscrambling the first word and listing its food group. After completion, lead a discussion about the foods listed, the food groups, and the questions at the end of the worksheet.

Ask students to create appealing and nutritionally balanced meals by using only the foods given on the worksheet.

Ask some of the students to share their lists of meals with the class.

Language Arts **Grade 5**

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TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Transparency: "Appendix C: A Pattern for Daily Food Choices" or copies for each student

Worksheet: "Roundup A Pattern"

Overhead projector

Answer Key

1. EGGS
2. CAULIFLOWER
3. CANTALOUPE
4. NOODLES
5. MACARONI
6. BROCCOLI
7. YOGURT
8. SOYBEANS
9. CHICKEN
10. MOZZARELLA CHEESE
11. TANGERINES
12. BLACKEYED PEAS

ESSENTIAL ELEMENTS

Language arts. Reading. Developing vocabulary to understand written material. The student shall be provided opportunities to use context to understand the meaning of words; understand content area vocabulary.
Language arts. Reading. Using comprehension skills to gain meaning from whatever is read. The student shall be provided opportunities to recall specific facts and details that support the main idea and/or conclusion; draw logical conclusions, and make generalizations.

NAME ______________________________ **DATE** ______________

ROUNDUP A PATTERN

Directions:

- Unscramble the words below. Each unscrambled word is a nutritious food choice. Use one letter for each blank in the left column at the bottom of the page.
- List the food group that the unscrambled food item belongs to in the right column at the bottom of the page.
- Answer questions 13 and 14 on the back of this page.

1. **G S G E**
2. **F W R C L A U I L O E**
3. **P L C N E A T U A O**
4. **S N O E L O D**
5. **N C M O R A I A**
6. **C B L I R O C O**
7. **T G Y R U O**
8. **N E Y S B O S A**
9. **K H C C N E I**
10. **O M Z R A L A L Z E E H E C S E**
11. **S N E I T G A N R E**
12. **L C K B A Y E E D S A P E**

MOZZARELLA CHEESE
TANGERINES
CANTALOUPE
BLACKEYED PEAS
BROCCOLI
CHICKEN
SOYBEANS
CAULIFLOWER
EGGS
MACARONI
YOGURT
NOODLES

UNSCRAMBLED FOOD ITEMS	*FOOD GROUP*
1. _ _ _ _	____________
2. _ _ _ _ _ _ _ _ _ _ _	____________
3. _ _ _ _ _ _ _ _ _ _	____________
4. _ _ _ _ _ _ _	____________
5. _ _ _ _ _ _ _ _	____________
6. _ _ _ _ _ _ _ _	____________
7. _ _ _ _ _ _	____________
8. _ _ _ _ _ _ _ _	____________
9. _ _ _ _ _ _ _	____________
10. _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	____________
11. _ _ _ _ _ _ _ _ _ _	____________
12. _ _ _ _ _ _ _ _ _ _ _ _ _	____________

Questions:

13. What is meant by a ***balanced diet***?
14. Why do you think it is important to select foods from all the food groups in order to have a balanced diet?

Language Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices when eating away from home.

ASSESSMENT CRITERIA

- Examine the School Breakfast Program.
- Identify ways the School Breakfast Program can help students make wise food choices.

ACTIVITIES & STRATEGIES

Discuss the importance of eating breakfast.

Day one:

- Inform the students that the school's cafeteria manager has been invited to speak to the class tomorrow concerning the School Breakfast Program.
- Tell students to work in small groups to develop questions for the cafeteria manager, for example:
    - ° What is the School Breakfast Program?
    - ° How does it help students improve their nutrition?
    - ° If our school does not have such a program, why not?
    - ° How is it decided which foods to serve?
- Let the students discuss the suggested questions and decide which questions to give to the cafeteria manager to use during the classroom visit.

Day two:

- Welcome and introduce the cafeteria manager to the class.
- Allow the manager to answer the students' prepared questions. Tell students to take notes and write down other questions which may occur to them as the manager is speaking.
- Encourage questions and discussion after the manager is finished speaking.
- Let the students interview or ask additional questions of the manager.
- Instruct students to write an article on the importance of eating breakfast.

RESOURCES & MATERIALS

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

In advance, invite the cafeteria manager to speak to your class and bring menus for the students. Ask the manager to inform the students of ways the School Breakfast Program can help them make wise food choices when eating away from home.

ESSENTIAL ELEMENTS

Language arts. Listening. Developing skill in attending to, responding to, and analyzing oral communications. The student shall be provided opportunities to employ active listening in a variety of situations, select from an oral presentation the information needed.

Writing. Using a variety of techniques to select topics and to generate material to write about those topics. The student shall be provided opportunities to use ideas and information from sources other than personal experiences for writing; and select and narrow a topic for a specific purpose.

Language Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Examine the effects of poor dietary habits.

ASSESSMENT CRITERIA

- Identify the effects of a diet that is deficient in certain nutrients.
- Formulate a plan for preventing and correcting the nutrient deficiencies.

ACTIVITIES & STRATEGIES

Ask the students the following questions:

- How many of you are concerned about your complexion and the way your hair looks?
- How many enjoy playing sports or taking dance lessons?
- What effect does the food you eat have on the way you look and on your ability to participate in physical activities?
- Have you seen pictures of starving children in Ethiopia and other third world countries? They suffer from severe malnutrition because food supplies are limited in quantity and variety. It is uncommon for us to see people in our neighborhoods that have experienced severe starvation like the people in Ethiopia. However due to our food choices, some of us can be deficient in one or more nutrients.

Nutrients are substances in foods that the body needs for growth, energy, and to maintain good health. Therefore, diet affects the way people look, feel, and act. The opposite column lists a few of the nutrients, their functions, and the effects of a deficiency of that nutrient.

Divide the class into six groups and assign each group a nutrient from the list or allow any group to choose a nutrient that is not listed. Instruct each group to research their nutrient, describing the functions, food sources, and the effects of a deficiency. The report should include a plan for correcting the deficiency by suggesting ways to incorporate foods that are rich sources of the nutrient into their diets. After completion, ask each group to present their report to the class.

Explain that eating nutritionally balanced breakfasts and lunches prepared in the school cafeteria instead of soft drinks, chips, or candy is important in preventing nutrient deficiencies. The following healthy snacks can help prevent nutrient deficiencies: fresh fruits and vegetables, raisins, applesauce, cheese and crackers, tortillas with cheese, beans, peanut butter, and homemade milkshakes.

RESOURCES & MATERIALS

Nutrients	Signs of Deficiencies	Food Sources
Protein	• poor muscle tone, poor posture with drooping shoulders, becomes ill easily	• meat, milk, cheese, egg, peanuts, legumes
Carbohydrates	• weight loss, fatigue, lack of energy	• breads, pasta, rice, fruits, milk & milk products
Vitamin A	• increased susceptibility to infection, poor color, dry eyelids, reddened eyes	• dark green and dark yellow vegetables, fruits, whole milk
Vitamin C	• sore, bleeding gums, bruises, tenderness in joints, loss of appetite	• fresh fruits and vegetables, especially citrus fruits and green leafy vegetables
Vitamin D	• poorly formed bones and teeth	• fortified milk, egg yolks, liver, fish filets
Iron	• anemia, tired, run-down feeling, paleness, dizziness	• lean meats, egg yolks, legumes, leafy green vegetables
B vitamins	• dry cracking skin & lips, irritability, weakness	• enriched whole grains, eggs

TEACHER TIP

Students need to be made aware that any nutrient deficiency should be diagnosed by a medical doctor.

ESSENTIAL ELEMENTS

Language arts. Reading. Applying reading skills to a variety of practical situations. The student shall be provided opportunities to use the dictionary and the encyclopedia to locate information.

Language arts. Writing. Using a variety of techniques to select topics and to generate material to write about those topics. The student shall be provided opportunities to use ideas and information from sources other than personal experiences for writing.

Language Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify various eating disorders and their symptoms.

ASSESSMENT CRITERIA

Analyze the symptoms and effects of anorexia nervosa and bulimia nervosa.

ACTIVITIES & STRATEGIES

Present the following information, or invite a resource speaker who is qualified to speak on eating disorders to the class.

Anorexia nervosa and bulimia nervosa are two eating disorders that are characterized by an obsession with controlling body weight. Eating disorders develop in some adolescents and teens as a means of coping with the changes and increasing demands on their lives. Both disorders are self-destructive and may lead to serious health problems.

Anorexia nervosa or compulsive self-starvation:
- Usually occurs in females ages 12-25.
- Anorexics are characterized as being extremely thin, and maintaining a body weight lower than the minimum for age and height.
- Anorexics may be extremely thin but feel that they are fat.
- Some anorexics are overactive and exercise excessively.
- Anorexics often have low self-esteem and feel that others control their lives.
- Anorexia nervosa results in severe health disorders and can cause death.
- Anorexics' body processes slow down, resulting in low blood pressure, slow respiration, cold intolerance, and constipation.

Bulimia nervosa or compulsive binge-eating and purging:
- Bulimics engage in recurring episodes of binge-eating (eating excessive amounts of food), and sometimes feel that they cannot control their behavior.
- Most bulimics maintain normal weight.
- Most bulimics binge secretly.
- Bulimics use self-induced vomiting, laxatives, rigorous dieting, or fasting to counteract their binges.

Continued in next column.

RESOURCES & MATERIALS

Continued from previous column:

- Bulimics may fast or exercise excessively along with the binges.
- The average binge lasts less than 1 1/4 hours and involves about 3400 calories.
- Bulimia nervosa can cause fatigue, seizures, muscle cramps, decreased bone density (weakened bones), and irregular heartbeat.
- Excessive vomiting may lead to tooth damage as well as esophagus and throat inflammation and damage.

People that suffer from anorexia nervosa or bulimia nervosa frequently deny that they have a problem and resist treatment. Once they have acknowledged the problem, treatment includes medical care as well as psychiatric and nutrition counseling.

Lead a discussion by asking the following or similar questions:
- What are the similarities and differences of the two eating disorders?
- What symptoms accompany the disorders?
- How do each of the eating disorders affect the body?
- How do you think the eating disorders will affect mental and physical performance?

Ask the students to write:
- an article for a teen magazine that would define and discuss anorexia nervosa and bulimia nervosa or
- a fictitious story about a student with an eating disorder.

ESSENTIAL ELEMENTS

Language arts. Listening. Developing skill in attending to, responding to, and analyzing oral communications. The student shall be provided opportunities to select from an oral presentation the information needed.
Language arts. Writing. Developing skills in writing effectively for a variety of purposes, modes, and audiences. The student shall be provided opportunities to rearrange information to accomplish a specific purpose with a particular audience.

LESSON OBJECTIVE

Discuss wise consumer food-buying skills.

ASSESSMENT CRITERIA

- Define terms found on food packages.
- Examine and classify food terms.

ACTIVITIES & STRATEGIES

Distribute food labels to the students.

Identify and discuss common terms found on food labels.
Write these terms on the chalkboard:
- net content weight (ounces or grams)
- ingredient lists
- calories
- nutrient weights (protein, carbohydrate, fat, sodium, potassium)
- serving sizes

Instruct the students to write the definitions for these food terms found on the packaging:
- fat
- additive
- gram
- fiber
- saturated
- protein
- polyunsaturated
- carbohydrate
- monounsaturated
- calories

Inform the students that they will go on a supermarket scavenger hunt to find some of these terms on food labels.

Distribute and review the worksheet, "Supermarket Scavenger Hunt," before the field trip.

Take the students on a pre-arranged field trip to a local grocery store. If the field trip is not possible, assign the worksheet to the students as homework and use food products from their own kitchen cabinets.

Language Arts **Grade 5**

5

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Worksheet: "Supermarket Scavenger Hunt"

"Supermarket Savvy," one-hour video, NET Library

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Food labels and/or packages for each student
Several dictionaries

TEACHER TIPS

- **Make arrangements with a local supermarket manager to prepare a brief talk to the students on how the market is organized.**
- **If the shopping trip becomes a homework assignment, encourage parent input.**

In advance, ask the cafeteria manager to give a tour of the cafeteria warehouse or storeroom to look at institutional packaging and sizes of food.

ESSENTIAL ELEMENTS

Language arts. Reading. Developing vocabulary to understand written material, the student shall be provided opportunities to use the dictionary to determine formal and informal language.
Language arts. Reading. The student shall be provided opportunities to follow a set of directions and adjust the method and rate of reading to the purpose and type of material, including study-type reading.

NAME ______________________ DATE ______________

Supermarket Scavenger Hunt

1. On a sheet of notebook paper, compose a shopping list of the following four items:
    - a favorite breakfast cereal
    - a favorite quick meal (frozen entree, can of soup, etc.)
    - a food you perceive as a healthy food
    - a food you perceive as junk food

2. Find those items in the grocery store.

3. Read the labels of the foods on your shopping list. On your paper, list the foods in order, from lowest in fat grams per serving to highest in fat grams per serving.

4. On the label of your favorite breakfast cereal, find all the names for sugar. The names for sugar include corn syrup, maple syrup, molasses, honey, dextrin, dextrose, sorghum, brown sugar, sorbitol, mannitol, sucrose, fructose, lactose, galactose, glucose, and maltose. List the names of the sugars found in the cereal you chose.

5. Find and list the different sugars found in the food item on your shopping list that you said was healthy for you.

6. Go to the bakery section of the store and find a polyunsaturated oil. Write the brand name of the oil.

7. Find a food item on your list that has no additives and name the food. If all of the food items on your list have additives, find another food item that has no additives and name the food.

8. Write the number of grams of fiber in each of your food items.

9. Do you still believe the healthy food choice you selected is good for you? Why?

10. Which food on your list has the lowest number of fat grams?

11. What did you learn about quick meals, frozen entrees, or soups?

12. How many times is salt or sodium included in the ingredient listing of the quick meal?

13. Was your quick meal low or high in additives?

14. Is the junk food on your list really *junk*? Why?

15. How has this scavenger hunt changed your thinking about your favorite foods?

LESSON OBJECTIVE

Recognize the effects of food on health and appearance.

ASSESSMENT CRITERIA

- Identify the effects of eating different amounts of nutrients at breakfast.
- Create breakfasts to fit different lifestyles and needs.

ACTIVITIES & STRATEGIES

Discuss the following points concerning the effects of breakfast on health and performance.

- Breakfast means "breaking a fast." A fast is when the body has been deprived of food for a prolonged period of time such as overnight.
- During a fast, the blood glucose levels which provide fuel for the body are reduced.
- Breakfast supplies the necessary nutrients to raise the blood glucose levels after a fasting period.
- When breakfast is skipped, one-fourth to one-third of the nutrients needed for health are missing from the diet.
- Without these nutrients, alertness is reduced, work output decreases, and reactions are slower.
- Skipping breakfast can result in headaches, stomach cramps, and irritability.
- Attitudes and academic achievement are affected by breakfast because the brain needs glucose to function.

Distribute and review the worksheet, "Avoid Midmorning Slump," with the students. After completion, review the answers with the class.

Using "Appendix C: A Pattern for Daily Food Choices" as a transparency, write several breakfast menus with the class to incorporate:

- breakfasts for those who wake up late
  - breakfast shakes with milk and fruit
  - yogurt
  - leftover supper entrees
- breakfasts for those who do not like breakfast
  - wheat and cheese or peanut butter crackers
  - English muffin pizzas
  - breakfast burritos
  - bacon, lettuce, and tomato sandwich

Instruct students to create their own breakfasts based on their own lifestyles. Ask some of them to share their breakfast menus with the class.

Mathematics **Grade 5**

5

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Worksheet: "Avoid Midmorning Slump"

Appendix C: "A Pattern for Daily Food Choices" made into a transparency

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Overhead projector

ANSWER KEY

1. **Breakfast #2. It does not provide enough to discourage mid-morning hunger pangs.**
2. **Breakfast #1. Did not eat anything so energy must come from body storage.**
3. **Four hours**
4. **Breakfast #3. It provides enough protein to help you to be alert and to discourage mid-morning hunger pangs and provides enough carbohydrates for energy.**

ESSENTIAL ELEMENT

Mathematics. Problem solving. Experience in solving problems designed to systematically develop students' problem-solving abilities through a variety of strategies and approaches. The student shall be provided opportunities to engage in the following types of activities: select appropriate strategies from a variety of approaches.

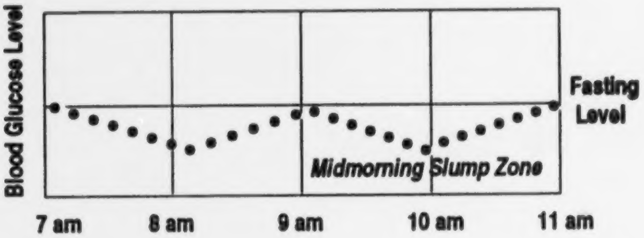
NAME ______________________________ DATE ____________

Avoid Midmorning Slump

It is important to eat food in the morning to maintain an adequate blood glucose level. A morning meal of approximately 40 grams of carbohydrates and 12-18 grams of protein helps the body avoid a midmorning slump.

Breakfast #1
Skips morning meal
Energy must come from body storage

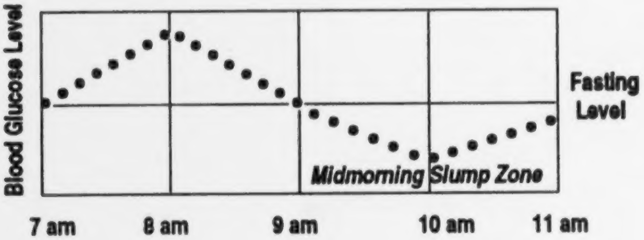
Carbohydrate:	0 grams
Protein:	0 grams
Fat:	0 grams



Breakfast #2
High carbohydrate morning meal

2 doughnuts
1/2 cup orange juice

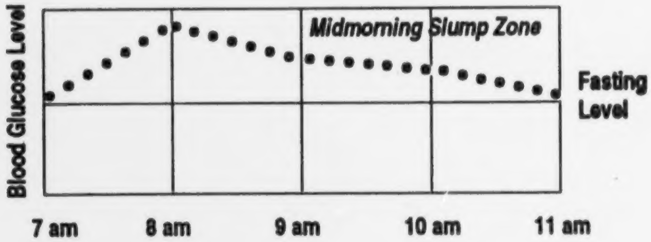
Carbohydrate:	45 grams
Protein:	7 grams
Fat:	24 grams



Breakfast #3
Meets morning meal needs

1 slice whole wheat toast
with 2 tbsp. peanut butter
8 oz. milk
1/2 cup orange juice

Carbohydrate:	41 grams
Protein:	17 grams
Fat:	26 grams



1. Which breakfast gives an early boost, but does nothing to maintain energy until lunch? Why?

2. Which breakfast gives the body nothing above fasting level? Why?

3. According to the chart, how many hours will a breakfast of over 40 grams of carbohydrates and over 12 grams of protein maintain energy needs?

4. Which breakfast would best fill your midmorning energy needs? Why?

Mathematics **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Illustrate ways to avoid excess cholesterol, fat, salt, and sugar.

ASSESSMENT CRITERIA

Analyze a pictograph to determine amounts of salt in various food items.

ACTIVITIES & STRATEGIES

Discuss the following information regarding salt in the diet:

- Sodium is one of the chemical elements in salt, for example, sodium chloride.
- Some salt is needed in the diet because it helps keep the heart and kidneys functioning properly.
- Salt does not have to be intentionally included in the diet because most people get more than enough salt every day.
- Most people consume more salt or sodium by eating processed foods which are high in sodium than from using the salt shaker.
- If too much salt is consumed, a person runs the risk of developing high blood pressure which can lead to stroke, heart attack, and kidney failure.
- In order to avoid these conditions, it is best to limit salt intake in a day by replacing high-salt foods with low-salt foods and avoiding the salt shaker.
- The National Research Council, Food and Nutrition Board, recommends that healthy adults and children consume no more than 2400 mg. sodium per day. (July 1989)
- One teaspoon of salt contains 2100 mg. sodium.

Distribute and review the worksheet, "Salt Stackers," with the students. Allow time for completion, then review the rank order of the answers.

RESOURCES & MATERIALS

Worksheet: "Salt Stackers"

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

ANSWER KEY

1. one peach
2. one carrot
3. one graham cracker
4. one-half toasted bagel
5. one eight-ounce fruit-flavored yogurt
6. one ounce processed cheese
7. one frankfurter (beef and pork)
8. one cup salted peanuts
9. one cup canned tomato soup
10. one whole dill pickle

In advance, ask the cafeteria manager to discuss with the class how the cafeteria is limiting sodium in the meals.

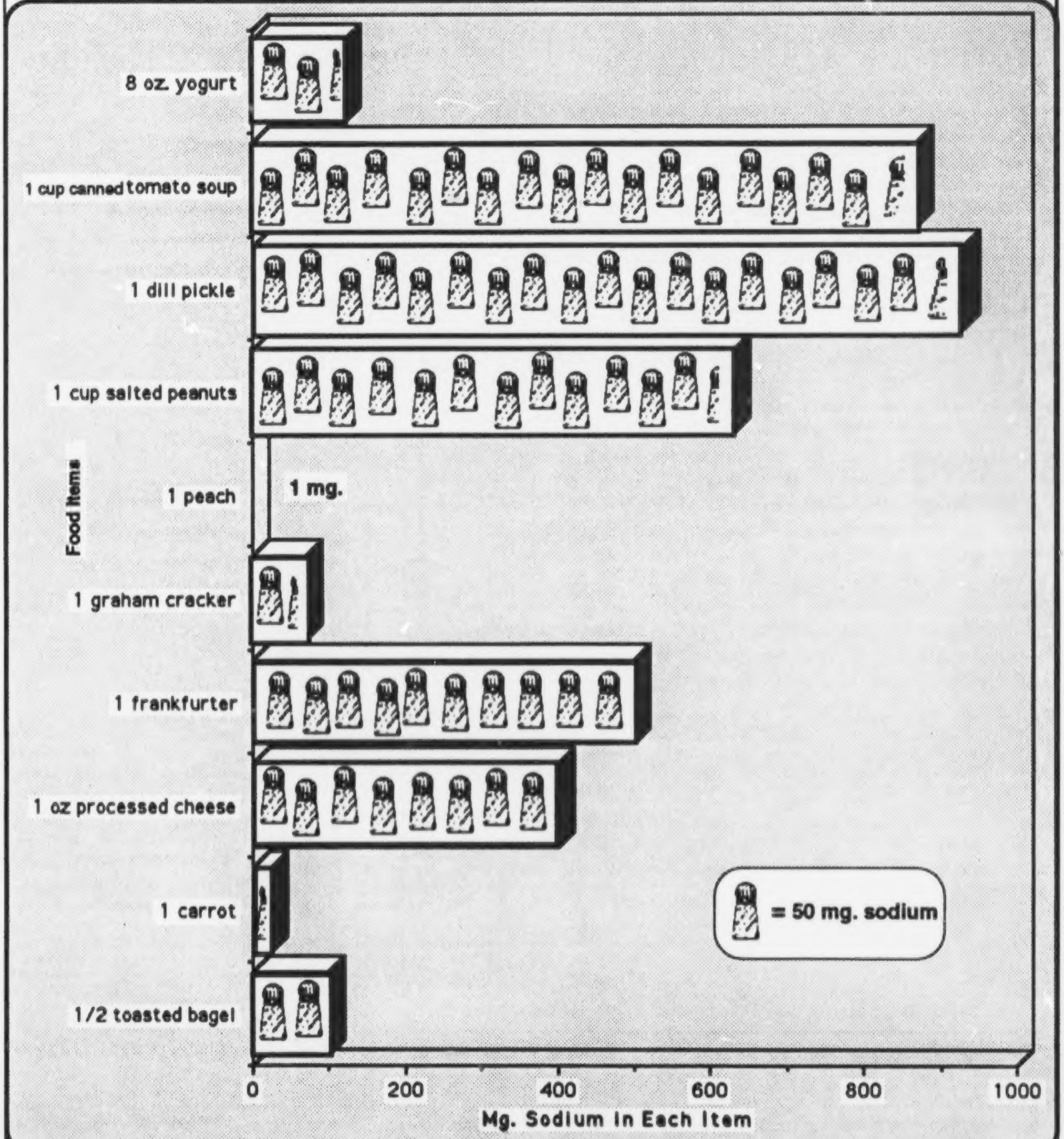
ESSENTIAL ELEMENT

Mathematics. Problem solving. Experience in solving problems designed to systematically develop students' problem-solving abilities through a variety of strategies and approaches. The student shall be provided opportunities to engage in the following types of activities: analyze problems by identifying relationships, discriminating relevant from irrelevant information, sequencing, observing patterns, prioritizing and questioning.

NAME ______________________________ **DATE** ____________________

Salt Stackers

You may be hungry when you go home after school. It is wise to choose a snack that is low in sodium. Look at the pictograph below and determine what snack is lowest in sodium. On another sheet of paper, rank the food items according to the amount of sodium in them, from the least to the most amount of salt.



Mathematics **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Analyze nutrition information on food labels.

ASSESSMENT CRITERIA

- Identify the component parts of the nutrition information provided on food labels.
- Analyze the nutrition information on a food label.

ACTIVITIES & STRATEGIES

Distribute a food label to each student.
Present the following information concerning the component parts of the food label:

- The law concerning nutrition labeling states that if any nutrition information is on the label of a food package, it must use a specified format under the heading, *Nutrition Information.*
- A food label should contain the following nutrition information:
  - Serving size
  - Number of servings in the package
  - Food energy or calories per serving
  - The grams of protein, carbohydrates, and fat per serving
  - Percentages of the U. S. Recommended Daily Allowances (U. S. RDA's) for protein, vitamin A, vitamin C, thiamin, riboflavin, niacin, calcium, and iron per serving. Some products may include the grams of fiber (also included in the total for carbohydrates) and the amounts of saturated and unsaturated fats.

Many manufacturers voluntarily include nutrition information. They are required by law to include the nutrition information on the food product label if:

- Nutrients are added to fortify or enrich the product.
- A nutritional claim is made such as *low-calorie, low-fat, cholesterol-free, high-protein, no sugar added,* or *no preservatives.*

Most of the milk available in the grocery stores is fortified and most of the breads and cereals are enriched. Reading the information on the label will provide this information.

Distribute and review the worksheet, "What Does This Label Tell Me?" with the students. Instruct them to complete the worksheet using the food labels that they brought from home and to staple their labels to the worksheet.

Discuss with the students how they can use this knowledge when they help with grocery shopping.

RESOURCES & MATERIALS

Worksheet: "What Does This Label Tell Me?"

Food labels with nutrition information from assorted food packages or containers

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ESSENTIAL ELEMENT

Mathematics. Problem solving. Experience in solving problems designed to systematically develop students' problem-solving abilities through a variety of strategies and approaches. The student shall be provided opportunities to engage in the following types of activities: analyze problems by identifying relationships, discriminating relevant from irrelevant information, sequencing, observing patterns, prioritizing and questioning.

NAME ______________________________ DATE ________________

WHAT DOES THIS LABEL TELL ME?

Complete this label by using the nutrition information from a label brought from home. Then answer the questions below.

NUTRITION INFORMATION PER SERVING:
Serving size __________
# of servings per container __________
Calories __________
Protein (grams) __________
Carbohydrate (grams) __________
Fat (grams) __________

Percentage of U. S. RDA
Protein __________
Vitamin A __________
Vitamin C __________
Thiamin __________
Riboflavin __________
Niacin __________
Calcium __________
Iron __________

1. How many calories would 3 servings of your food provide? ______________
2. Protein supplies 4 calories of food energy per gram of protein. How many calories are supplied by the protein in one serving of your food? ______________
3. Carbohydrates supply 4 calories of food energy per gram of carbohydrates. How many calories are supplied by the carbohydrates in one serving of your food?
   ____
4. Fats supply 9 calories of food energy per gram of fat. How many calories are supplied by the fats in one serving of your food? ______________
5. Do proteins, carbohydrates, or fats provide the most calories in your food?
   ______________ (Name the one which provides the most calories.)
6. How many servings of your food would you need to eat to get 75 % of the U. S. RDA for Vitamin A? ______________
7. Your food provides the highest percentage of the U. S. RDA for what nutrient?
   ____
8. The doctor has told you that you are anemic and that you need to meet 100% of the U. S. RDA for iron. A food is said to be a good source of a nutrient if it provides 20% of the U. S. RDA for that nutrient. Is your food a good source of iron? ________ Why? ______________
9. How many servings of this food would be required to provide 100% of the U. S. RDA for iron? ______________

Science **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Describe the relationship of food to energy, growth, and health.

ASSESSMENT CRITERIA

- Recognize that fructose is the sugar in fruit.
- Identify the amount of fructose in under-ripe, ripe, and over-ripe fruit.

ACTIVITIES & STRATEGIES

As fruit ripens, the fruit changes in color, texture, odor, and taste. There are also chemical changes such as the change of starch to sugar.

Fructose, also known as fruit sugar, is the most concentrated sweetener. Small amounts of fructose provide the same sweetening as larger amounts of other sugars.

Perform the investigation, "Finding Fructose," to determine whether under-ripe fruit, ripe fruit, or over-ripe fruit has more fructose.

1. Chop an under-ripe banana, a ripe banana, and an over-ripe banana into many small pieces.
2. Give small pieces of the fruit to each student to taste on a paper plate with the classification clearly written on the plate next to each piece of fruit.
3. Complete the bar graph to show the relative sweetness of each piece.
4. Repeat the investigation with grapes and plums. Use raisins for over-ripe grapes and prunes for over-ripe plums.
5. After completion, ask students to discuss their conclusions.

Discuss with the students:

- Fruit sugars, or fructose, are simple carbohydrates.
- Table sugar, or sucrose, is a simple carbohydrate.
- All carbohydrates provide 4 calories per gram.

Ask students to name the advantages of using fructose (fruit sugar) instead of sucrose (table sugar). The fructose in a piece of fruit:

- Is diluted in a large volume of water because a piece of fruit contains a large percentage of water.
- Is packaged in fiber.
- Is mixed with vitamins and minerals.
- Provides glucose to the body which is the fuel needed by the brain and nerves.

RESOURCES & MATERIALS

Worksheet: "Finding Fructose"

"Instructor's Resource Guide for Nutrition Education" found in the introductory section of *ESR IV*

Ripe, under-ripe, and over-ripe fruit, such as: bananas, plums (prunes), and grapes (raisins)

ESSENTIAL ELEMENTS

Science. Acquire data through the senses. The student shall be provided opportunities to observe phenomena resulting from the life, earth, and physical sciences.

Science. Communicate data and information in appropriate oral and written form. The student shall be provided opportunities to record data and interpret the arrangement of data on bar graphs, line graphs, tables, and other visuals.

NAME ______________________ **DATE** ____________

Finding Fructose

Directions:

Make a bar graph to show the relative amount of fructose in under-ripe, ripe, and over-ripe fruit.

Very Sweet Taste									
No Sweet Taste									
	Under-ripe	Ripe	Over-ripe	Under-ripe	Ripe	Over-ripe	Under-ripe	Ripe	Over-ripe
	Bananas			Plums			Grapes		

Conclusion:

____

____

____

____

LESSON OBJECTIVE

Describe the relationship of food to energy, growth, and health.

ASSESSMENT CRITERIA

Perform an investigation on fat digestion.

Science **Grade 5**

5

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Fat is an essential nutrient and a concentrated energy source for the body. It supplies energy over a longer period of time than carbohydrates because it breaks down slowly and because it contains 9 calories per gram while carbohydrates only have 4 calories per gram.

Too little fat in the diet can cause weight loss and failure to grow and develop properly. It can also cause an inability to absorb the fat-soluble vitamins, A, D, E, and K.

Too much fat in the diet will cause a person to gain weight. Being overweight causes a strain on the heart and other organs, and often leads to disease and a shorter life expectancy. Eating saturated fat can lead to higher levels of cholesterol in the blood.

The only way to lose weight is to reduce the intake of calories and increase the amount of physical activity. This forces the body to use stored fat as fuel to produce energy.

Neither the mouth nor the stomach secrete specific enzymes to digest fat. Fats are digested in the intestines by enzymes secreted from the pancreas.

Perform the following investigation on fat digestion.

1. Mix a tablespoon of cooking oil into a full jar of water. The oil will accumulate on the top of the water. Mixing the combination will break the fat into many small globules, but the oil will not mix with the water.
2. Add two tablespoons of liquid soap and mix vigorously with a fork. What is the result?
3. The oil does not disappear, but breaks into many tiny globules, with the liquid soap in between the oil and the water.

The intestines contain enzymes which cause a similar process. The fat is broken down into fine globules so that other enzymes can digest it.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Getting To Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

1 tablespoon cooking oil
Liquid soap
Quart jar
Fork for stirring

TEACHER TIP

Be sure students understand that no enzyme or food "melts" away fat.

ESSENTIAL ELEMENT

Science. Identify and manipulate the conditions of investigations. The student shall be provided opportunities to identify the variables that change and the variables that do not change in an investigation.

LESSON OBJECTIVES

- List the functions of dietary fiber in the body.
- Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

- Identify foods that are high in insoluble fiber.
- Explain the importance of insoluble fiber in the diet.

Science **Grade 5**

5

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Insoluble fiber cannot be dissolved in water.

Discuss the fact that roughage or insoluble fiber is essential in the diet. The lack of insoluble fiber in the diet can cause constipation. Constipation is a condition in which the bowel movements are difficult and infrequent.

Insoluble fiber also:

- Helps to reduce the risk of colon cancer by allowing food to pass quickly through the digestive tract. This limits exposure to agents in the food that might cause cancer.
- Stimulates muscles of the digestive tract. Well-toned muscles aid in prevention of diverticulosis and hemorrhoids.
- Absorbs water and gives a feeling of fullness. This helps people feel full longer which contributes to healthier eating and weight control.

When a food is a good fiber source, it generally contains both insoluble and soluble fiber.

Allow the students to see, touch, and smell the samples of foods that are high in insoluble fiber.

Conduct the following investigation to demonstrate the ability of fiber to absorb water. Measure the dry weight of a whole bran cereal. Add water slowly, allowing time for the cereal to absorb it. When the cereal will not absorb any more water, weigh the cereal again and determine the weight of the water that was absorbed. Did the cereal absorb water equal to its own weight? Twice as much?

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Changing the Course: Upper Elementary Curriculum," American Cancer Society

Samples of food that are high in insoluble fiber:
Fruits—apple, banana
Vegetables—beans, peas
Whole wheat products—bran muffin, whole wheat bagel

TEACHER TIP

Stress the importance of drinking plenty of liquids when eating a high fiber food.

ESSENTIAL ELEMENTS

Science. Measure using relationships to standards. The student shall be provided opportunities to gather metric measurement data.
Science. Draw logical inferences, predict outcomes, and form generalized statements. The student shall be provided opportunities to predict the outcomes of actions based on experience or data and make inferences based on data.

Science **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Explain the importance of safe handling of food.
- Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

- Describe different ways that food spoilage can be reduced or eliminated.
- Describe the rationale for drying food.

ACTIVITIES & STRATEGIES

Each year, more than one million Americans suffer from foodborne illnesses.

Effective food preservation can ensure food safety for a long period of time. Ask the students to describe different ways that food spoilage can be reduced or eliminated (Examples: canning, refrigeration, heating, and freezing).

One way to slow down or stop the growth of food-destroying microorganisms is to remove moisture from the food. The Native Americans removed the moisture from buffalo meat by hanging it out in the sun. This practice dried the meat and made it safe to eat long after it was dried. They did not know that they were creating a less desirable environment for bacteria.

Beef jerky can easily be made from lean steak:

1. Trim all fat from a piece of one-quarter inch thick flank steak.
2. Cut into thin strips against the grain.
3. Soak the meat strips overnight in a mixture of one-half cup salt and two cups of water.
4. Pat dry with a paper towel and dry in a toaster oven or the cafeteria oven. Set the oven on its lowest setting, about 150° F, for 8 to 10 hours. Leave the oven door slightly open.
5. When ready, the meat will be dry, shriveled, and dark.

Discuss the method of preserving food in this activity (heating).

Offer some pieces of the dried meat to students for them to taste and comment of the flavor.

RESOURCES & MATERIALS

Toaster oven
Sharp knife
Cutting board
Salt
Water
Measuring cup
Flank steak

In advance, ask the cafeteria manager for help in the preparation of this food.

ESSENTIAL ELEMENT

Science. Acquire data through the senses. The student shall be provided opportunities to observe phenomena resulting from the life, earth, and physical sciences.

LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

Identify the sources of protein.

Science **Grade 5**

5

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

The word *protein* comes from a Greek word which means *in the first place*. Protein is essential for growth and development and is vital to everyone's diet.

Half the weight of the human body, excluding water, is protein. The blood, brain, heart, liver, hair, and muscles are composed of primarily protein.

Calories from protein should make up 10-15% of your daily calorie intake. If you are between the ages of 7-10, multiply your weight X .55 to determine your daily protein needs. If you are between the ages of 11-14, multiply your weight X .45 to determine how many grams of protein are needed in a day's diet.

The most valuable sources of protein are lean meats, eggs, milk, and milk products. These foods can also be high in saturated fat and calories.

Some plant foods such as whole grains, legumes, and peanuts supply a high amount of protein and do not contain as much fat as meats, eggs, and whole milk.

Breakfast cereals are common foods that are made from grain. One bowl of cereal with milk provides approximately seven grams of complete protein.

Add these ingredients to oatmeal for a delicious hot cereal:
- 2 tablespoons wheat germ
- 1 cup nuts and/or seeds (sunflower, sesame, or almonds; amounts can vary based on preference)
- 1 cup dried fruit (raisins and/or chopped dates; amounts can vary based on preference.)

Another way of preparing this high-protein cereal is to combine the dry ingredients listed above, covering the mixture with three tablespoons of honey, and baking it in an oven at 300 degrees F for 30 minutes.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Ingredients for breakfast cereal:
Rolled oats
Wheat germ
Sunflower seeds, sesame seeds,
and/or almonds
Raisins and/or dates
Honey (optional)

TEACHER TIP

Complete proteins:
Foods that contain all of the essential amino acids. Proteins from animal sources are complete proteins.
Incomplete proteins:
Foods that lack one or more of the essential amino acids. Most plant sources are incomplete proteins.

ESSENTIAL ELEMENT

Science. Identify and manipulate the conditions of investigations. The student shall be provided opportunities to identify the variables that change and the variables that do not change in an investigation and manipulate the variables in an investigation.

Science **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Make wise food choices at snack time.
- Classify foods using a food grouping system.

ASSESSMENT CRITERIA

- Identify that cheese is a part of the milk group.
- Recognize that cottage cheese is a nutritious snack food.

ACTIVITIES & STRATEGIES

The milk group contains various types of milk and foods that are made from milk such as cheese, yogurt, ice cream, and pudding. Cottage cheese is one type of cheese that makes a nutritious snack because it is a concentrated source of protein and calcium.

Cottage cheese is a cultured dairy product. It is made from skim milk and a culture of either beneficial bacteria or acidifiers. Culturing is the addition of helpful bacteria (*Streptococcus lactis* or *Streptococcus cremoris*) to convert some of the milk sugar, lactose, to lactic acid. The lactic acid causes the formation of curd or solids.

Cottage cheese is considered a low-fat dairy product because it is made commercially from skim milk. A creaming mixture or dressing made from milk and/or cream can be added to cottage cheese. This means that the calories can vary depending on the type of creaming mixture added. More than half of the lactose is removed from cheese in processing; therefore, a person who has lactose intolerance (difficulty in digesting milk sugar) can usually eat some cottage cheese.

Cottage cheese is easy to make as a group project.

1. Pour one-half gallon of skim milk into a large clean bowl, and add three tablespoons of buttermilk, a source of *Lactobacilli*.
2. Cover the bowl and let the mixture stand overnight.
3. The next day, the milk will be clabbered, and the curds will begin to separate from the whey, or the liquid.
4. To further separate the curds and whey, cut the curds into cubes, and then heat to about 100 degrees F in a double boiler for 30 minutes. The curds left in the strainer are cottage cheese.
5. When the mixture is cool, pour the curds and whey through a cheesecloth to strain.
6. Refrigerate the cottage cheese until you are ready to eat it.

Cottage cheese makes a delicious, nutritious snack food.

Ask the students to list different ways to use cottage cheese.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Large plastic or stainless steel bowl
Hot plate or heat source
Measuring spoons
Plastic wrap
Double boiler
Spoons for stirring
Cheesecloth
Small bowls
Plastic spoons for tasting
One-half gallon of skim milk
Cultured buttermilk

TEACHER TIP

Remind the students that their homemade cottage cheese will not taste like commercially prepared cottage cheese because of the difference in processing and the additives.

ESSENTIAL ELEMENTS

Science. Acquire data through the senses. The student shall be provided opportunities to observe phenomena resulting from the life, earth, and physical sciences.

Science. Draw logical inferences, predict outcomes, and form generalized statements. The student shall be provided opportunities to predict the outcomes of actions based on experience or data.

LESSON OBJECTIVE

Examine food traditions.

ASSESSMENT CRITERIA

- Plan and create a poster that represents pilgrim life.
- Discuss factors that help establish and maintain a settlement.

ACTIVITIES & STRATEGIES

Divide the class into five groups.

Distribute and review the handout, "Pilgrim Scenes," and assign each group one of the five descriptions.

Instruct students to create a poster of the activities discussed in the assigned description on the handout, "Pilgrim Scenes."

Ask each group to present and describe its poster to the class.

Ask the students in each group to listen as you read this statement:

> *The pilgrim settlement endured because the people concentrated on establishing and maintaining the colony. Other groups came to the New World to find gold or establish military bases. Many of those groups did not survive.*

Ask each group to discuss some reasons why the pilgrim settlement survived. Using the pilgrims as role models, ask the students to tell about some things that they would plan and bring if they were members of a group who set out to establish a settlement in a new country in 1620.
Examples of elements for a new settlement:
- food
- medical care
- government
- shelter
- recreation

Ask students from each group to share with the class their reasons for the pilgrims' survival.

RESOURCES & MATERIALS

Handout: "Pilgrim Scenes"

"Coming to America," *Nutrition, Food and Culture*. National Live Stock and Meat Board, Chicago, Ill. 60611.

Paper
Felt tip pens
Colored pencils
Poster paper or construction paper

ESSENTIAL ELEMENT

Social studies. Historical data about Texas, the United States and the world. The student shall be provided opportunities to describe major historical events in the development of the United States.

Pilgrim Scenes

1. The pilgrims were Puritans who came from England. They were not allowed to practice their religion so they left for the New World to start a life that would allow them this freedom. They sailed for nearly two months on a ship called the Mayflower. To make such a journey, and to have enough provisions to last through one winter in America, the pilgrims had to plan very carefully. The fifty men, twenty women, thirty-two children, some chickens, goats, pigs, and dogs traveled together on the ship. The provisions they brought with them included salt beef, mutton, pork, biscuits, smoked herring, dried cod, and cheese.

2. The pilgrims chose to settle in Plymouth. They met the local American Indian tribe, the Wampanogas, in early spring. Both groups agreed to live in peace and help each other. The pilgrims built eleven houses by late spring, but 44 people did not survive through the winter. The pilgrims planted the seeds of barley, corn, and peas that they brought with them from England, and an American Indian named *Squanto* helped them plant Indian corn called *maize*. The colonists fished, searched for wild fruits and berries, and hunted fowl and deer.

3. The typical daily diet of the pilgrims included four ounces of salted or dried beef, pork, or fish, a gallon of ale, a pound of butter or cheese, one pound of peas or meal cooked into porridge, and pudding or bread. The pilgrims began to worry when the pea and barley crops, planted in the spring, failed that summer. They wondered what they would eat during the winter. The American Indian corn harvest was abundant in October, and they shared it with the pilgrims. The pilgrims preserved the corn by turning it into cornmeal. They salted and dried the fish and game meat to preserve a supply for the winter months.

4. The first Thanksgiving feast was celebrated in late fall after the corn harvest. The colonists were able to ration two pounds of cornmeal per person per day. The cornmeal proved to be the key to the successful establishment of the colony. Without the cornmeal, the pilgrims would have been forced to leave America and give up their religious freedom.

5. There are foods that were developed by the pilgrims that are still eaten today. Johnny cakes are flat unleavened tiny breads made from corn. Hasty pudding is corn mush that has been cooled, sliced, and fried. Succotash is a combination of beans and corn. The American Indians taught the pilgrims to soak beans overnight and then cook them for long hours. Boston baked beans were the result of many experiments which contained a variety of seasonings.

Social Studies **Grade 5**

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Investigate the customs of Middle Eastern cultures.
- Examine the influence of other cultures on our current food habits.

ASSESSMENT CRITERIA

- Investigate the customs of Middle Eastern countries.
- Categorize foods from Middle Eastern countries according to the food groups.
- Analyze the cultural influences of the Middle Eastern countries in Texas.

ACTIVITIES & STRATEGIES

Prior to class, read the "Middle Eastern Americans in Texas" found at the beginning of the fifth grade *ESR IV* lesson plans.

Display a current map of the Middle East. Ask different students to locate and point out for the class the countries that comprise the Middle East: Egypt, Saudi Arabia, Turkey, Syria, Iraq, Iran, Lebanon, Israel, and Jordan.

Present a summary of the information from the resource material, "Middle Eastern Americans in Texas."

Divide the class into groups of three or four students. Instruct each group to select a Middle Eastern country, research the customs, and determine how those customs have influenced the American way of life. Make sure that Syria and Lebanon are selected because most of the immigrants who came to Texas were from those countries. Information may be gained from library resources or by interviewing a person with a Middle Eastern background.

The foods native to each country should be classified into food groups using "Appendix C: A Pattern for Daily Food Choices" as a guide. Each group will be responsible for making some type of presentation to the class on the country that have they researched. The presentation should include visuals and possibly include food samples representative of the country selected.

Conclude the lesson by discussing the similarities and differences of the customs of the countries and the influence of immigrants from those countries on the state of Texas.

RESOURCES & MATERIALS

"Appendix C: A Pattern for Daily Food Choices"

"Middle Eastern Americans in Texas" resource information found at the beginning of the fifth grade *ESR IV* lesson plans

Map of the Middle East

ESSENTIAL ELEMENTS

Social studies. Psychological, sociological, and cultural factors affecting human behavior. The student shall be provided opportunities to identify the contributions of various cultures to the American way of life (art, literature, music, etc.).
Social studies. Social study skills. The student shall be provided opportunities to locate information in reference works (atlas, almanac, encyclopedia, etc.).

Social Studies Grade 5

5

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Develop an appreciation for foods from different cultural groups.
- Analyze the cultural and social aspects of food.

ASSESSMENT CRITERIA

- State important facts about Lebanon and Lebanese food.
- Observe and record information regarding the method of cooking a Lebanese dish.
- Taste and evaluate Lebanese food.

ACTIVITIES & STRATEGIES

Display a map of the Middle East. Ask the students to assist you in locating Lebanon. Distribute and review the worksheet, "Our Lebanese Friends," with the class. Allow students to volunteer to read each paragraph aloud to the class.

Instruct the students to reread the worksheet and begin answering the questions while you demonstrate the preparation of this Lebanese dish. Ask several students to assist you in following the recipe's ingredients and procedures.

Rice Pilaf from Lebanon

4 tablespoons plus 1 teaspoon olive oil
1/3 c. uncooked spaghetti noodles, broken into 1/2 inch pieces
3 cups long-grain rice
6 cups cold water
Salt to taste

In an electric skillet, saute the pieces of noodles until they are golden-brown. They burn easily, so stir them often.
Place the rice in the skillet.
Add water and salt. Cover, and bring to a boil.
Reduce the heat, cover the pilaf, and cook for about 20 minutes.

Vegetables may be added to this recipe.

After students complete the worksheet, "Our Lebanese Friends," discuss the answers to the questions. Allow the students to a sample the pilaf and comment about its taste.

RESOURCES & MATERIALS

Worksheet: "Our Lebanese Friends"

"Middle Eastern Americans in Texas" found at the beginning of the fifth grade *ESR IV* lesson plans

Map of the Middle East

Items for Rice Pilaf recipe:
  - Plastic forks
  - Paper plates
  - Electric skillet with lid
  - Wooden spoon
  - Strainer
  - Dry measuring cups
  - Measuring spoons
  - Liquid measuring cup
  - Spaghetti noodles
  - Olive oil
  - Long-grain rice
  - Water
  - Salt

In advance, check with the cafeteria manager about obtaining food and supplies for this activity.

ESSENTIAL ELEMENT

Social studies. Psychological, sociological, and cultural factors affecting human behavior. The student shall be provided opportunities to identify the contributions of various cultures to the American way of life (art, literature, music, etc.).

NAME ________________________________ **DATE** ________________

Our Lebanese Friends

Lebanon lies between Syria, Israel, and the Mediterranean Sea. It is one of the smallest nations in the world. It is between 25 and 35 miles wide and only 135 miles long. Unlike other Arab nations, Lebanon has no desert.

Lebanon has been the scene of many battles from ancient days to the present. In 3000 B.C., the land was ruled by the Phoenicians. They traded wheat, olive oil, wine, and the timber known as *the cedars of Lebanon*. The Phoenicians were the first people to use the north star for navigation. In 332 B.C., Alexander the Great conquered the area and brought it under Greek influence. The Greeks ruled the area until 64 B.C. The Romans occupied the area after the Greeks and traded raisins, wine, and purple dye with the peoples of the region.

Lebanese Christians began arriving in Texas around 1880. Lebanon was overpopulated, and economically in a slump. The political, social, and religious discrimination by the Ottoman Turks forced thousands to leave their homes and enter the United States. Thousands of Moslem Lebanese came to America after 1945 because of the conflicts in the Middle East.

Lebanon has recently been in the news because of the battles that have occurred there, and one of its most beautiful cities, Beirut, has been left in ruins.

As the Lebanese have immigrated to Texas, they have brought with them aspects of their culture and cuisine. As a result of this, Americans have the opportunity to expand their food choices and ingredient lists. Lebanese cooking utilizes a variety of foods, including olives, wheat, rice,and dates. Yogurt, garbanzo beans, and lamb are also staples of the diet. The Lebanese people are known for their hospitality and wonderful food.

A traditional social gathering called a ***sahria*** still takes place in churches, clubs,and families throughout Texas. They provide an experience of ethnic heritage for everyone of all ages. Arabic music, food, and drink are key components to the festival. Traditional Lebanese circle dances often highlight the sahria event while native instruments like the lute, a type of hand drum, and the tambourine, play the haunting music that is traditionally Lebanese.

A. As your teacher prepares the food item for you, and after you have read the paragraphs above, answer the following questions.
   1. What type of oil is used in this pilaf recipe?
   2. What is done to the spaghetti noodles before the rice is added?
   3. How long should the pilaf cook?

B. Name two countries that border Lebanon.
   1.
   2.

C. How is Lebanon different from most of the other Arab nations?

D. Why has Lebanon been in the news recently?

E. Describe a sahria.

Education
for
Self-Responsibility IV:

NUTRITION EDUCATION

GRADE
6

TEXAS EDUCATION AGENCY

ESR IV

Asian Americans in Texas

Grade Six

Asian Americans make up the fastest growing ethnic group in the United States. Asians are people who have origins in the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands, which includes China, Japan, the Philippine Islands, Vietnam, Cambodia, Laos, and Korea. For this reason, when Asian Americans are studied as a group, it is important to remember that this population is probably the most diverse minority group in the United States. Asian Americans come from more than twenty-four different countries and cultures and do not share a common language. In Texas, Asian Americans are limited in number compared to other ethnic groups.

THE CHINESE TEXANS

The Chinese were the largest group of Asians to immigrate to Texas during the 1800s. Chinese immigrants came to Texas in the 1870s as railroad workers and settled in Calvert in Robertson County and in El Paso. The railroad workers who remained in El Paso typically did not marry, but those in Robertson County often married African Americans from the Brazos Valley, resulting in the "black Chinese" of Calvert.

San Antonio was also a settlement site for approximately five hundred Chinese who followed General John J. Pershing after he captured Pancho Villa in Mexico. Immigration has continued with the new arrivals settling principally in Houston, which now has one of the largest percentages of Chinese in Texas and the United States.

Chinese restaurants are popular among many ethnic groups across the state. An old Chinese proverb says that 'food should smell appetizing as it is brought to the table, it must have harmonious color combinations, it must sound pleasing as it is being eaten, and it must taste delicious.' Special ingredients that make Chinese dishes so unique include fermented black bean, ginger root, Chinese peppercorns, garlic, scallions, hot pepper, star anise, soy sauce, water chestnuts, bean sprouts, bamboo shoots, Chinese pea pods, and sesame seed oil.

Chinese restaurants also reflect the diversity of food preparation methods of different areas of China. For example, Szechwan dishes use hot pepper, Cantonese dishes use more sweet-and-sour flavorings, Shanghai dishes are prepared well done, Shantung dishes use more onion and garlic, Maritime dishes use salty seafood, and Cantonese dishes are cooked for a short period of time to retain the natural flavors. Most Chinese foods are cooked in a wok (frying pan) which is a metal bowl that is wide at the top and narrow at the bottom.

Traditional holidays and customs are still observed by some Chinese Texans, although they have been modified over time. The celebration for Chinese Lunar New Year begins on New Year's Eve day when men traditionally settle all of their debts and the doors of the houses are sealed with red (the color of happiness and good fortune) paper and are not broken until early the next morning. Gifts and ceremonial greetings are exchanged at one second after midnight, and children receive gifts of money in red envelopes.

In another tradition, the Red Egg party commemorates the first cutting of a baby's hair when he or she is one month old. After the hair has been cut, a red egg is rubbed on the baby's head for good luck. Red eggs are also given to the guests as favors. Other Chinese traditions have become a part of American tradition, such as fireworks on the Fourth of July, which originated in California when the Chinese introduced fireworks in San Francisco during celebrations for California's admission to the United States in 1850.

The Ten-Ten Celebration which represents the tenth day of the tenth month is held on October tenth. The Ten-Ten Celebration is still observed by some Chinese Texans, and commemorates the founding of the Chinese Republic.

THE JAPANESE TEXANS

Japanese immigration to Texas has been very limited. The first known Japanese immigrant to Texas was a man called Tsukahara, a farmer who settled in Dallas county in the 1880s. His brother, a physician, immigrated later to the same area. This was a typical trend of the Japanese immigrants—the first immigrants were farmers, and later immigrants were professionals settling in large urban areas. In the early 1900s, the Japanese emperor encouraged emigration from Japan due to food shortages. Several colonies of Japanese were established in the Rio Grande Valley area including Brownsville (1913), Mission, Harlingen, and San Benito. A colony in Webster, near Houston, was headed by Saito Saibara whose rice crops were a great boost to the local economy. By 1920, only five hundred Japanese Texans were listed with the national Japanese Association.

Rice is the most important crop grown in Japan. More than half of the available tillable land is used for rice production. Other important crops include barley, rye, soybeans, sweet potatoes, and wheat. On the hillsides of Japan, a variety of fruits and vegetables are grown, including mandarin oranges, peaches, pears, cherries, apples, persimmons, beans, cabbage, carrots, peas, squash, and onions. Japanese immigrants continued to use these food products when they came to Texas and also adapted to other locally available products.

Traditional Japanese foods are still served in the homes of Japanese Texans where the presentation of the food is just as important as the preparation of the food. Rice is served with each meal just as traditional American meals serve bread. Since seafood provides most of the protein in the Japanese diet, traditional dishes typically include sashimi (raw fish), sushi (raw or cooked fish with rice), vegetables, tofu (soybean cake), and hot tea.

Fine Arts **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Distinguish between nutrition facts and fallacies.

ASSESSMENT CRITERIA

Create an advertisement for a fictitious food product.

ACTIVITIES & STRATEGIES

Define these terms:
- **fact**—something known to be true
- **fallacy**—a false idea

Brainstorm about folk tales which students may have heard, and relate this concept to fallacies about certain foods.

Review the handout, "Nutrition Facts and Fallacies."

Ask the students to think of an advertisement that uses one of these techniques. Discuss.

Divide the class into groups and instruct the students to create a fictitious food product based on one of the fallacies discussed. Tell the groups to design an advertisement that includes a picture and a written message that will sell their product.

Discuss the following questions:
- How could consumers protect themselves if the Food and Drug Administration lifts the ban prohibiting health claims on food labels?
- How will food labels give valuable information to the consumer?

RESOURCES & MATERIALS

Handout: "Nutrition Facts and Fallacies"

Art materials
Examples of advertisements that use a fallacy/myth to influence the consumer

TEACHER TIP

The Food and Drug Administration regulates food labels that prohibit health claims.

ESSENTIAL ELEMENT

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to express individual ideas, thoughts, and feelings in simple media including drawing, painting, printmaking, constructing and modeling three-dimensional forms, manipulating fibers and exploring photographic imagery.

Nutrition
Facts and Fallacies

Sometimes people accept ideas about foods and nutrition without question. These beliefs can often be harmful to health. Some of the myths and facts are:

FALLACY	FACT
People only need milk when they are young children.	Milk is a good source of calcium, a mineral needed by people of all ages.
Honey and brown sugar are more nutritious than sugar.	The calories in all three forms of sugar are equivalent.
White eggs are not as nutritious as brown eggs.	The nutritive value of eggs is not determined by their color. Both types of eggs have the same nutrients but are laid by different kinds of chickens.
It is impossible to get a sufficient amount of nutrients from food alone, because many of our foods are grown in deficient, poor soil.	The size of the crop may be affected by poor quality soil, but the nutrient quality of the food grown in that soil would not change.
Grapefruit on a daily basis in a diet can break down body fat and help people lose weight.	Grapefruit cannot break down body fat, but it is an excellent source of vitamin C. No food can break down body fat.
A high-protein diet builds muscles.	High-protein diets do not build larger, stronger muscles. Strength is improved by conditioning, overall health, and a balanced diet.

It is wise to ask yourself these questions when messages about food are stated. If a claim seems too amazing to be true, it probably is.

- Is the speaker a nutritionist with qualifying credentials from a reputable university?
- Does the person promote one food and encourage the exclusion of other foods?
- Does the promoted food sell for a high price?
- Does the person ridicule authorities such as the U.S. Food and Drug Administration?

LESSON OBJECTIVE

List the functions of dietary fiber in the body.

ASSESSMENT CRITERIA

- Create a poster identifying the foods high in fiber.
- Identify the food groups which include foods high in fiber.

Fine Arts **Grade 6**

6

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Discuss with the students the following information regarding fiber in the diet:

- Fiber is the part of plants that the human body cannot digest.
- Fiber is classified into two categories: soluble and insoluble.
- Soluble fiber is dissolved in water and may help control diabetes and lower blood cholesterol levels in some people. It is found in some foods such as fruits, beans, and oat bran.
- Insoluble fiber is not able to be dissolved in water and has different functions from soluble fiber. Insoluble fiber helps move food through the digestive tract. It aids in the prevention of colon and rectal cancer and helps prevent constipation. Sources of insoluble fiber are fruits, vegetables, wheat bran, whole wheat, and some beans.
- Insoluble fiber also helps to control ***diverticulosis*** which occurs when bulging pockets form in the intestinal wall and become inflamed.

Write the following functions of fiber on the board:

- Fiber keeps contents of the intestines moving and helps prevents constipation.
- Fiber helps reduce the risk of colon cancer by allowing food to pass quickly through the digestive tract.
- Fiber stimulates muscles of the digestive tract, and helps prevent diverticulosis.
- Fiber absorbs water and gives a feeling of fullness. This helps people feel full longer and contributes to healthy eating and weight control.

Instruct the students to create a poster of high-fiber foods. Tell them to:

- Represent the foods in a drawing or a painting.
- Identify the food group to which each food belongs.
- Be creative in the approach towards promoting the food items as beneficial for the body by including the functions of fiber on their posters.
- Create an original title for their poster.

RESOURCES & MATERIALS

"Appendix C: A Pattern for Daily Food Choices"

Paper
Paint
Colored pencils or felt tip markers

The following is a list of some high-fiber foods that students may choose as the subject of their posters:

Bran muffin
Whole wheat bread
Whole wheat bagel
Brown rice
Apple
Banana
Blueberries
Blackberries
Cranberries
Dried figs
Oranges
Pears

Broccoli
Brussels sprouts
Corn
Green peas
Kidney beans
Lima beans
Pinto beans
Spinach
Leafy vegetables
Raisins
Okra
Raspberries

In advance, check with the cafeteria manager about putting posters in the cafeteria.

ESSENTIAL ELEMENT

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to express individual ideas, thoughts and feelings in simple media including drawing, painting, printmaking, constructing and modeling three-dimensional forms, manipulating fibers, and exploring photographic imagery.

Fine Arts **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Explore the influence of food advertising and the media on food habits.

ASSESSMENT CRITERIA

Compose a song, design a poster, or write a radio or television advertisement that promotes healthy meals or foods.

ACTIVITIES & STRATEGIES

Discuss with the students the information found on the transparency, "Advertising/Media Techniques."

Divide the class into six groups. Each group will assume the role of an advertising agency whose task is to create an advertisement that persuades the rest of the class to eat nutritious foods. The advertisement can be a jingle, poster, or radio or television advertisement.

Instruct the students to determine the topic for their advertisement based on the following examples:
- Baked or broiled beef instead of a hot dog
- Baked or broiled fish instead of a hamburger
- Juices instead of soft drinks
- Boiled, broiled, or baked foods instead of fried foods
- Fresh fruit instead of cookies
- Fresh vegetables instead of candy
- Benefits of school lunch instead of fast foods or vending machines

Tell each group to decide on a food they want to sell, then choose the form of advertisement they want to use to sell their product.

Provide magazines for students to study advertisements or to cut out pictures for visual aids.

Brainstorm some memorable commercials that the students may have heard or seen on radio or television or in magazines. They may want to use these as a model or a resource when producing their advertisements.

Provide time for each group to present their advertisement to the class.

RESOURCES & MATERIALS

Transparency: "Advertising/Media Techniques"

Art materials
Magazines

ESSENTIAL ELEMENTS

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to express individual ideas, thoughts, and feelings in simple media including drawing, painting, printmaking, constructing and modeling three-dimensional forms, manipulating fibers, and exploring photographic imagery.
Fine arts. Music. Singing concepts and skills. The student shall be provided opportunities to create dramatizations, movements, and new words to songs.

Advertising/Media Techniques

Attraction Technique: Features attractive people who imply that by eating the food product, one can be as glamorous or good looking as they. Examples might be a gorgeous executive or a rugged athlete.

Having Fun Technique: Features people enjoying themselves in activities, such as skiing, playing tennis or golf, riding bicycles, bowling, or fishing. These advertisements say that you will have fun if you eat this food.

Comparison Technique: These advertisers say that their food choice is higher in nutrients like protein, vitamins, or minerals, for example, than the competition. They imply that you will be healthier if you eat what they are selling.

Status Appeal Technique: Features exclusive settings where you find only celebrities or the very wealthy. Such advertisements suggest that if you eat the food promoted, you will be like the rich and famous.

Join the Crowd Technique: Peer pressure is used by showing a large group having a good time. It hints that you will be included in their fun if you join them in eating a particular food product.

Symbol Technique: A symbol or a sign is used to suggest success, happiness, or some other concept. For example, a greyhound or a racehorse might exhibit speed in association with a logo. A tall tower might be used to suggest success.

Testimonial Technique: Consumers make statements on the effectiveness and success of the product. It implies that if you use this product you will have the same success as the person giving the testimonial.

Hero Endorsement Technique: These advertisers imply that using this product will make you like the person who endorsed the product. Usually a famous athlete or a television or movie star is featured.

Fine Arts **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Examine the effects of poor dietary habits.

ASSESSMENT CRITERIA

- Discuss the importance of eating breakfast.
- Examine solutions to problems related to skipping breakfast.

ACTIVITIES & STRATEGIES

Identify the reasons for eating breakfast.

- In the mornings, our bodies have been without food for at least half a day, 12 - 14 hours. It is difficult to consume adequate nutrients and calories in the remaining waking hours.
- If we skip breakfast, our bodies have no fuel to help them function. The body becomes tired and cannot perform at its maximum.
- People who eat nutritious breakfasts are better able to concentrate and perform physical and mental tasks. Irritability, dullness, and drowsiness have been noted in students who do not eat breakfast.
- Eating breakfast can help in weight control because there is less of a chance to have low blood sugar levels and hunger later in the day which can cause overeating or eating the wrong kinds of foods.

Brainstorm the reasons that students give for not eating breakfast. List the suggestions on the board and discuss.

Divide the class into small groups of 3-5 students. Tell each group to plan a short skit about a student who ate a regular or nontraditional breakfast or a student who did not eat breakfast.

Discuss some ways that students could avoid skipping breakfast by eating nontraditional foods for breakfast. Ask each group of students to enact their skit in front of the class.

RESOURCES & MATERIALS

Better Breakfast, Texas Agricultural Extension Service

In advance, ask the cafeteria manager to see if the cafeteria can be used for the skits.

ESSENTIAL ELEMENT

Fine arts. Theatre arts. Expressive use of the body and voice. The student shall be provided opportunities to create original dialogue.

Fine Arts **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Analyze the cultural and social aspects of food.

ASSESSMENT CRITERIA

- Name ways that the Mexican market is important to families in the mountains of Mexico.
- Create visual comparisons of a supermarket and an open-air market.

ACTIVITIES & STRATEGIES

Distribute the handout, "A Trip to Market." Read the story as a class.

Discuss impressions the students have of an open-air market.
- How does the Sunday market differ from the American marketplace?
- What social interaction takes place in the food exchanges at the market?
- What cultural differences do you see in the Mexican market and the American market?

Tell the class that modern supermarkets do exist in the larger cities of Mexico. Open-air markets are often found in the smaller villages.

Divide the class into two groups. The Market Group should prepare a collage of an American supermarket. The Mercado Group should prepare a collage of an open-air market like the one in the story. Instruct each group to create a visual image of pictures and words appropriate to the assigned setting.

Ask each group to select a spokesperson to explain to the class the reasons for selecting the items in their collage.

RESOURCES & MATERIALS

Handout: "A Trip to Market"

Scissors
Glue
Colored paper
Magazines
Newspapers

ESSENTIAL ELEMENT

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to express individual ideas, thoughts, and feelings in simple media including drawing, painting, printmaking, constructing and modeling three-dimensional forms, manipulating fibers, and exploring photographic imagery; and experiment with art materials to understand properties and develop manipulative skills.

NAME ______________________ **DATE** ______________

A Trip to Market

In a remote village nestled deep in the Sierra Madre mountains of Mexico lives a young woman named Rosa Perez. She is excited because today is Sunday. It is the day her family makes their weekly trip down the mountain to church and then to the open market. Traveling seven miles each way does not seem so long to Rosa, unless she must carry her market basket. Today, it is necessary to carry a full basket. She ties a strap around it and her head in order to keep one hand free for her little brother, Miguel.

Rosa has an idea for making the burden lighter. She is bringing a piece of pottery she made in hopes of trading it for a lighter-weight plastic basket. Rosa learned the skill of pottery from her mother, Maria, who also weaves scarves by hand. They are brightly-colored and bring *dinero* to the Perez family at the market. Everyone loves the scarves, but only a few can be made each week, so Mrs. Perez is thinking of raising the price of the scarf today. She wants to have enough pesos to buy pistachios for an extra treat, and she also wants to buy some mangos and coriander herb for her family meals.

Pablo, her husband, wants to barter or sell some avocados and chilies that he has grown for a new knife and especially for a new bit for the burro harness. The burro is the Perez' only means of transportation because the bus which runs between villages and to town does not come high enough to reach their village.

Pablo's son, Juan, is anticipating Sunday market for different reasons. He barters his services for goods. When church is over, the family eats Sunday lunch under the cacao trees in the plaza. Juan watches over the stand of the goat's milk vendor. This allows the merchant an opportunity to purchase items that his family needs from other vendors. In return for Juan's service, the merchant gives Juan's family goat's milk for lunch and for making cheese at home. They add chocolate to the milk. The chocolate is made from the cocoa beans that grow from the cacao trees on their farm.

Juan and his friends play chase games after his work is done. They wish they had something of value to exchange for one of the carving knives or hats that they see in the market. For Rosa's mother and the other women, shopping is a way to visit with friends that they have not seen for a week. If the children are obedient, they earn pomegranates from the fruit cart. Rosa walks with her friends in the courtyard, eats chorizo sausage and pumpkin seeds, and listens to music. Mr. Perez will gather with the men at the market to talk and keep up on the news, crops, and weather reports.

Sunday market is one of the most enjoyable activities for Rosa's family. Friends do not have the freedom to converse because villages are so far apart in the mountains. The week's chores, work, and school do not allow much time to see each other on weekdays. Since Rosa's duties include helping care for her little brother, Miguel, she looks forward to the relief of that duty on Sundays.

LESSON OBJECTIVE

Identify the functions of nutrients as they relate to growth and health.

ASSESSMENT CRITERIA

Identify common sources and functions of calcium in the diet.

Health **Grade 6**

6

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Lead a class discussion on the importance of calcium, stressing the following points:

- Calcium is necessary for bone rigidity, blood clotting, muscle contraction, and normal nerve functions.
- Calcium also helps to regulate the heart beat.
- Weight-bearing exercise (exercise such as walking and jogging rather than swimming or biking exerts weight on the bones and adds density to bones) and eating balanced meals that provide sufficient amounts of calcium and vitamins C and D help us in two ways:
  - ° to build strong bones and teeth
  - ° to increase calcium absorption
- Peak calcium storage occurs during adolescence.
- The RDA for calcium during adolescence is 1200 milligrams per day.
- When we fail to eat foods that contain adequate calcium, our bodies rob the bones of stored calcium. This loss can cause damage to vertebrae or can cause hip fractures later in life. This is called ***osteoporosis*** and frequently occurs primarily in older women.
- Smoking and excessive use of caffeine and alcohol can cause calcium depletion.
- Minerals are necessary for optimum muscle performance.

Discuss some of the foods that are good sources of calcium and list them on the chalkboard. Cross check with the list of calcium-rich foods in the opposite column. Also include other commonly-eaten foods such as milk, cottage cheese, ice cream, ice milk, and pudding.

Ask the students to identify calcium-rich foods on the school lunch menu.

Assign students to develop a personal plan to add more minerals to their diets.

Evaluate some of their favorite foods for minerals. Use "Appendix E: Food Composition Table."

RESOURCES & MATERIALS

"Appendix E: Food Composition Table"

List of some calcium-rich foods:
broccoli
turnip greens
mustard greens
collard greens
spinach
sardines
shrimp
oysters
salmon
yogurt
cheddar cheese
goat's milk
buttermilk
Romano cheese

In advance, ask the cafeteria manager to provide school lunch menus and review them for sources of calcium with the students.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to make healthful food choices in context of social environment.

LESSON OBJECTIVE

Identify the functions of nutrients as they relate to growth and health.

ASSESSMENT CRITERIA

- Discuss the functions of vitamin C.
- Name common sources of vitamin C in the diet.

ACTIVITIES & STRATEGIES

Introduce students to the valuable role of vitamin C in proper nutrition by giving them the following facts:

- It is a water-soluble vitamin that is readily available in many fresh fruits and vegetables.
- The vitamin C foods are needed to form collagen which is important in healing broken bones and in forming scar tissue. It works together with calcium.
- Vitamin C is not made or stored in the body, so we need to include food in our daily meals that contains enough of this useful nutrient.
- Adequate amounts of vitamin C can be obtained from food each day without taking vitamin supplements.
- Large doses of vitamin C can produce diarrhea, nausea, and rashes.
- Vitamin C cannot cure a common cold.
- Excess vitamin C is excreted by the body in the urine.
- Freezing fruits and vegetables helps preserve the vitamin C in them.
- Scurvy is a disease caused by the lack of vitamin C in the diet. It affects blood vessels, teeth, and joints.

Before 1750, sailors often suffered from scurvy on long voyages because they did not have fresh fruits or vegetables to eat. The British sailors began to stock limes on board their ships so they could drink a small amount of lime juice each day to prevent scurvy. They became known as *limeys* because of this practice.

Discuss some fruits and vegetables that are good sources of vitamin C and list them on the chalkboard. Cross check with the vitamin C list in the opposite column.

Ask individual students to describe one of the foods on the vitamin C list.

Ask students to identify vitamin C foods on the school lunch menus.

RESOURCES & MATERIALS

Poster, "Reduce Your Cancer Risk," American Cancer Society

List of some vitamin C-rich foods:

romaine lettuce
mustard greens
Brussels sprouts
cantaloupe
green peppers
tomatoes
spinach
clams
strawberries
oranges
lemons
limes
grapefruit
cabbage
broccoli
asparagus
papaya
cauliflower

In advance, ask the cafeteria manager to provide school lunch menus and review them for vitamin C foods with the students.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to make healthful food choices in concept of social environment.

LESSON OBJECTIVE

Recognize the effects of food on health and appearance.

ASSESSMENT CRITERIA

- Choose foods that protect good health.
- Identify foods that may improve body functions.

ACTIVITIES & STRATEGIES

Lead the students in an exploration of many roles of food by asking them to think about and answer a series of questions. Write their responses on the chalkboard, reminding them that there are no right or wrong answers.

- Why do we eat food? (Possible responses are shown in the opposite column.) Circle the students' responses that pertain to health.
- Why do you think some foods help us to be healthy and others get in the way of good health? (Different foods are made up of components that affect our bodies in different ways.)
- What types of illness do you think might be related to foods we eat? (heart disease, diabetes, cancer, high blood pressure)
- What are some misconceptions about foods and health?

Display the transparency, "Protectors and Promoters." Discuss the fact that a person can lower his or her chances for disease by eating more *protector* and less *promoter* foods.

Students should list the foods they consider to be health protectors or disease promoters. As they share their answers, write their suggestions in the appropriate column on the transparency, "Protectors and Promoters."

Adapted from:
"Changing the Course: Intermediate Curriculum," American Cancer Society, p. 19 - 23

RESOURCES & MATERIALS

Transparency: "Protectors and Promoters"

"Changing the Course: Intermediate Curriculum," American Cancer Society

Why do we eat food?

- for energy
- to grow
- to keep healthy
- to develop strong bodies (bones, heart, and muscles)
- because our bodies need it to function
- because it tastes good
- because we're with our friends
- to think clearly
- to celebrate a special occasion
- because we're bored

TEACHER TIPS

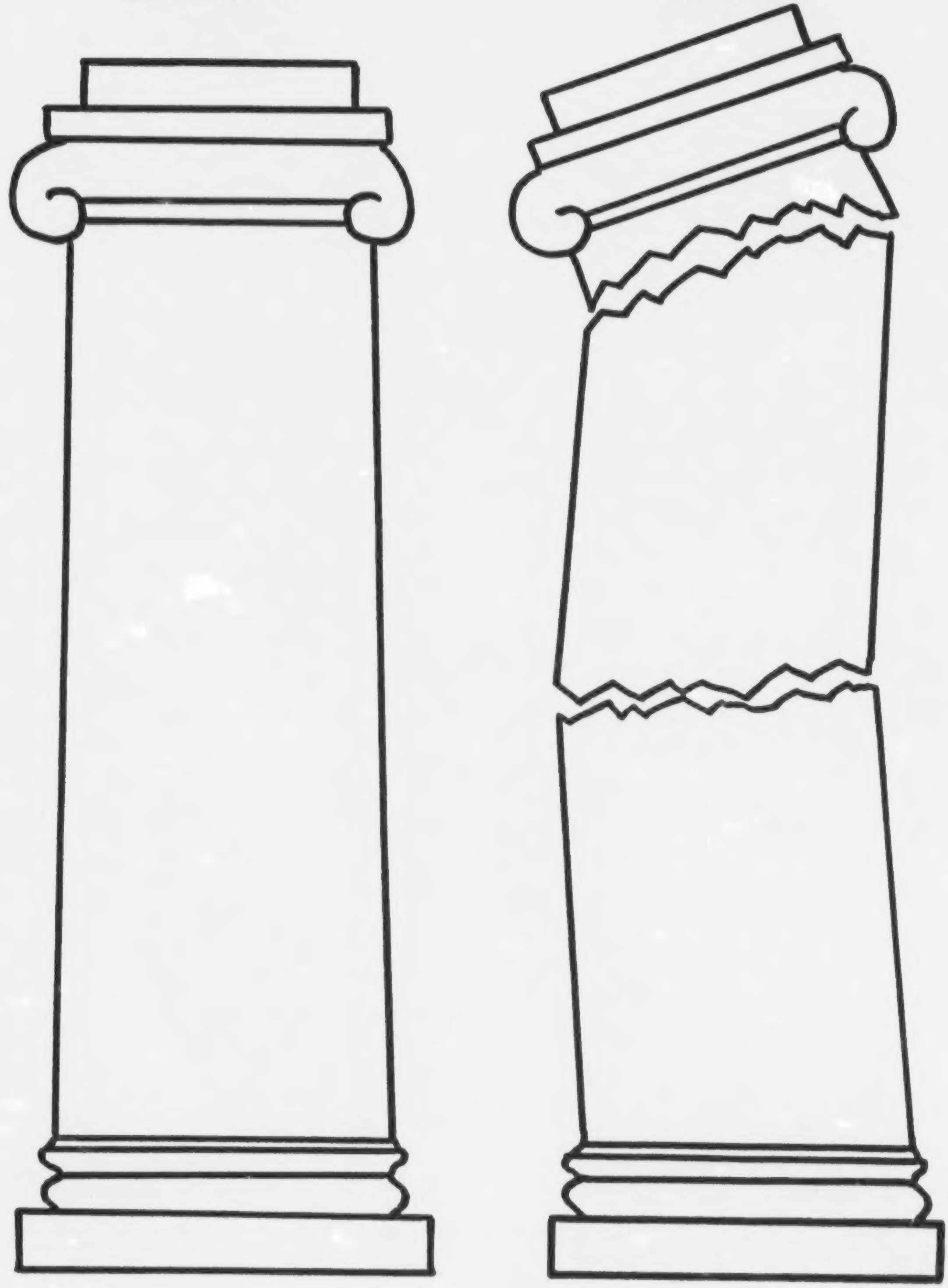
- **Misconceptions about foods and health:**
  - **Chocolate causes acne.**
  - **Sugar gives energy.**
  - **Grapefruit burns fat.**
  - **Protein builds muscle.**
- **Promoter foods do not cause cancer. Once the cancer has been initiated, promoter foods encourage its growth.**

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to identify ways to care for the principal body systems.

Protectors and Promoters

Eat More **Eat Less**



LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

Create a list of alternative activities to eating when our emotions cause us to indulge unwisely.

ACTIVITIES & STRATEGIES

Explain that our emotional state often triggers extreme behaviors such as overeating or not eating at all when we are upset. Both choices impact our dietary intake.

Discuss possible eating behaviors such as:
- craving and consuming sweet foods
- wolfing a bag of potato chips
- munching on anything
- feeling too sick to touch any food
- skipping meals

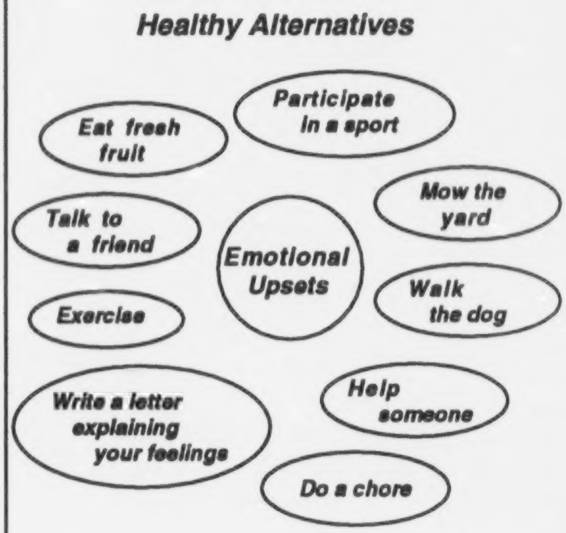
List on the chalkboard suggested alternative behaviors which might be healthier methods of coping with various emotions. Use a web diagram with the heading, "Healthy Alternatives."

Give each student a copy of the calendar handout, "Emotions and Eating Habits." Ask students to keep a written or pictorial record of their emotions for five days. Ask them to jot down what they eat or do as a response to emotional changes. See if they can discover a pattern of eating unwisely when they are experiencing certain emotions. Marking the calendar will raise their awareness. Stress the importance of recording entries daily to ensure correct recall.

Draw a web diagram with the heading, "Healthy Alternatives." In the center, write *Emotional Upsets*. Around it, write some alternatives as students give ideas. See the example in the opposite column.

RESOURCES & MATERIALS

Worksheet: "Emotions and Eating Habits"



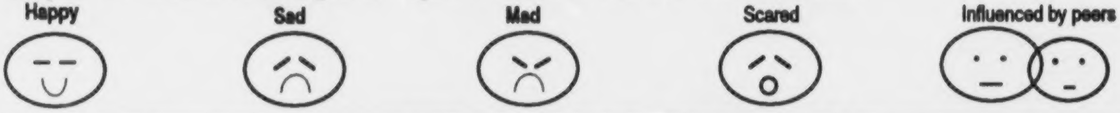
ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to identify daily practices that promote self-concept and make healthful food choices in context of social environment.

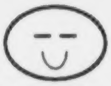
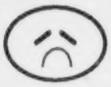
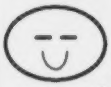
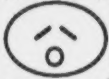
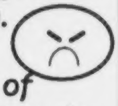
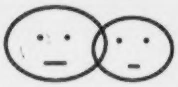
NAME ________________________________ DATE ____________________

Emotions and Eating Habits

Instructions: Keep a five-day diary of the way you feel and your responses to your feelings. Record the foods and the amounts eaten and to what emotion you responded. List other activities you do instead of eating as a response to emotions. Use these symbols:



Example of diary:

Tuesday	Wednesday	Thursday	Friday
 My birthday! Lots of presents! I ate too much cake and ice cream.	Oh my stomach!  I couldn't eat breakfast.  Ate lunch at school. My favorite food – pizza!	a.m. – Dog chased me to school!  Whew! I made it. p.m. – Sis got mad at me.  I ate a whole bag of chocolate candy.	 Spent the night at my best friend's. We made cookies and the two of us ate all we baked.

Student's diary:

Day 1	Day 2	Day 3	Day 4	Day 5

LESSON OBJECTIVE

Make wise food choices when eating away from home.

ASSESSMENT CRITERIA

- Evaluate menus from various restaurants.
- Demonstrate wise food choices.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:

- When people begin to make their own choices about what they eat, they then become responsible for promoting their own health and wellness.
- What is eaten affects the body's growth, appearance, and well-being. Wise food choices should be made regardless of the outside pressure an individual may feel from friends or society to make food choices that are not healthy.
- It is important to eat a variety of foods to ensure that one gets all the essential nutrients such as vitamins, minerals, protein, and carbohydrates.
- Choose a diet that will help maintain a desirable weight.
- Choosing a diet low in fat, saturated fat, and cholesterol is important in reducing the risk of heart disease.
- Choose a diet with plenty of vegetables, fruits, and grain products.
- Use sugar in moderation to reduce the risk of tooth decay.
- Use salt in moderation to reduce the risk of high blood pressure.
- School food service provides food that supplies the essential nutrients needed to maintain health.
- Students make a wise choice by eating foods prepared by school food service.

Divide students into small groups. Ask students to review a menu from a local restaurant, fast food place, or the school lunch menu.

Discuss the food items that would be healthy choices.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

School lunch menus or menus from a variety of local restaurants and fast food places

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

In advance, ask the cafeteria manager for a copy of the school lunch menu.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to make healthful food choices in context of social environment.

LESSON OBJECTIVE

Make wise food choices at snack time.

ASSESSMENT CRITERIA

Choose healthy snack foods.

ACTIVITIES & STRATEGIES

Lead a discussion with the students emphasizing that when they make choices about what they eat, they are responsible for the effects those choices have upon the health of their bodies. Explain that it is important to:

- Eat a variety of foods in order to get the nutrients needed to maintain good health.
- Choose low-fat foods that are not high in saturated fat. ***Saturated fats*** are solid at room temperature and can be found in foods like butter, chocolate, egg yolks, and lard.
- Choose foods that are low in ***cholesterol***. Foods high in saturated fats and cholesterol are linked to an increased risk for cardiovascular disease.
- Choose a diet with plenty of vegetables, fruits, and grain products.
- Use sugars in moderation. The more often these foods are eaten, the greater the risk for tooth decay.
- Use salt in moderation. Excessive amounts of salt may lead to high blood pressure.
- Read labels on food packages because prepared snack foods are often high in sugar, salt, and fat.
- Choose snack foods carefully because snack foods as well as regular mealtime foods affect the health of the body.

Instruct the students to choose the healthier of two snack food items as you read the *Either/Or* list found in the opposite column. Discuss the choices.

Distribute a label to each student. Ask two students to stand and describe their snack food including the nutrition information. Allow the class to decide which snack food is healthier and justify their decision.

RESOURCES & MATERIALS

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Labels from a variety of snack foods

Either/Or

1. doughnut or English muffin (whole wheat)
2. apple or chocolate bar
3. tortilla (corn) or cheese puffs
4. jelly beans or honeydew melon
5. pudding or egg
6. pecan pie or apricots
7. whole milk or low-fat milk
8. toast with peanut butter or corn chips
9. half a bagel or french fried potatoes
10. carrot sticks or carrot cake
11. naval orange or orange-flavored gelatin
12. apple cinnamon muffin or chocolate cake
13. snack cake with cream filling or cereal (low-sugar) with milk
14. kiwi fruit or high-fat crackers
15. caramel popcorn or strawberries

In advance, ask the cafeteria manager to discuss snacks served in the cafeteria and to suggest healthy choices. Ask the students to suggest healthy snacks that they would like to see in the cafeteria.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to make healthful food choices in context of social environment.

LESSON OBJECTIVE

Discuss nutritional needs of the pre-adolescent and the adolescent.

ASSESSMENT CRITERIA

- Relate the importance of breakfast as a nutritional need.
- Create breakfast menus using unusual foods.

Health **Grade 6**

6

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Explain that breakfast should include about one-third of an adolescent's daily nutritional requirements.

- Breakfast should include at least one serving from each food group. (Meat group is optional.)
- Breakfast is needed by students in order to perform the physical and mental tasks required in school.
- It is important not to skip breakfast.

Distribute and review the worksheet, "Off-beat Breakfasts."

Ask the students to:

- Keep it simple; with little or no cooking involved.
- Keep it short; prepared and eaten in minutes.
- Make it something that you would enjoy eating.
- It does not need to include typical breakfast foods.

Distribute copies of "Appendix C: A Pattern for Daily Food Choices" to each student to use as a reference.

Read and analyze the sample breakfast menus on the worksheet with the students.

Remind students to use a variety of the food groups when they create their own menus.

Ask for volunteers to share one of their recipes with the class. Discuss and stress that nontraditional foods fit into a breakfast menu.

Display students' menus on a bulletin board, bind them into a class book, or make them available to the class so that students can examine the diversity of food choices.

RESOURCES & MATERIALS

Worksheet: "Off-beat Breakfasts"

"Appendix C: A Pattern for Daily Food Choices"

TEACHER TIP

Remind students that they need a variety of foods from all the food groups which can be accomplished throughout the course of a day rather than in every meal.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster personal health and safety. The student shall be provided opportunities to make healthful food choices in context of social environment.

NAME ______________________________ **DATE** ____________________

Examine these sample breakfast menus.
Any of them provide a nutritious
One-Serving-Per-Group meal.

Off-beat Breakfasts

Get It Shakin'

➪ Yogurt Shake—
Blend:
1 cup fruited low-fat yogurt,
1 small can low-sugar peaches,
1 banana, 4 tbsp. peanut butter,
1/2 cup milk
➪ 1 bran muffin

Pep-It-Up Pizza

➪ Biscuit Pizzas—
Split in half 1 biscuit or English muffin
spread spaghetti sauce on each half,
add cheese slice on the sauce,
add a favorite veggie on cheese.
➪ A cup of milk
➪ An apple

Stick 'em Up

➪ Banana on a Stick—
Place a banana on a popsicle stick,
spread it with peanut butter,
roll it in whole-grain granola cereal,
freeze or refrigerate it,
eat it the next morning.
➪ A cup of low-fat milk

One-Serving-Per-Group Plan

A nutritious breakfast should include
1 serving from each of these food groups:

- *Vegetables*
- *Fruits*
- *Breads, Cereals, Rice, and Pasta*
- *Milk, Yogurt, and Cheese*
- *Meat, Poultry, Fish/Beans (Optional)*

Using the "Pattern for Daily Food Choices" for a complete list of foods within each food group, create three unusual breakfast menus below. Refer to the *One-Serving-Per-Group Plan* in the center of this worksheet as a guide. Give each menu a descriptive title.

Remember:

- Keep it simple
- Keep it short
- Make it your preference
- It does not have to be traditional

Breakfast 1: ______________
(title)

____

____

____

____

____

____

Breakfast 2: ______________
(title)

____

____

____

____

____

____

____

Breakfast 3: ______________
(title)

____

____

____

____

____

Health **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Explain the role of nutrition and physical fitness in maintaining good health.

ASSESSMENT CRITERIA

Analyze factors that influence health.

ACTIVITIES & STRATEGIES

Discuss the meaning and importance of good health with the students.

Divide the students into groups of three. Instruct each group to do a mind-mapping activity based on the teacher resource, "Factors Influencing Health."

Draw on the chalkboard or an overhead projector the diagram from the teacher resource. It is important that the students do not use the teacher resource as a handout because you will want them to go beyond the limitations presented by the boundaries of the page.

Help the students get started on their own mind-map by filling in a few of the areas, then discuss them.

Ask each group to diagram the information that you have provided.

Emphasize that they are to expound on this information and come up with a larger form of the diagram. Encourage the students to be creative and to go beyond the level of empty spaces on the teacher resource page; they may fill in the empty spaces, or, if needed, add more of their own.

When the students complete the exercise, come back together as a class and discuss each group's ideas.

Ask students to analyze their own lives and determine if there are any areas that they could improve and how they would improve these areas of their lives.

RESOURCES & MATERIALS

Teacher Resource: "Factors Influencing Health"

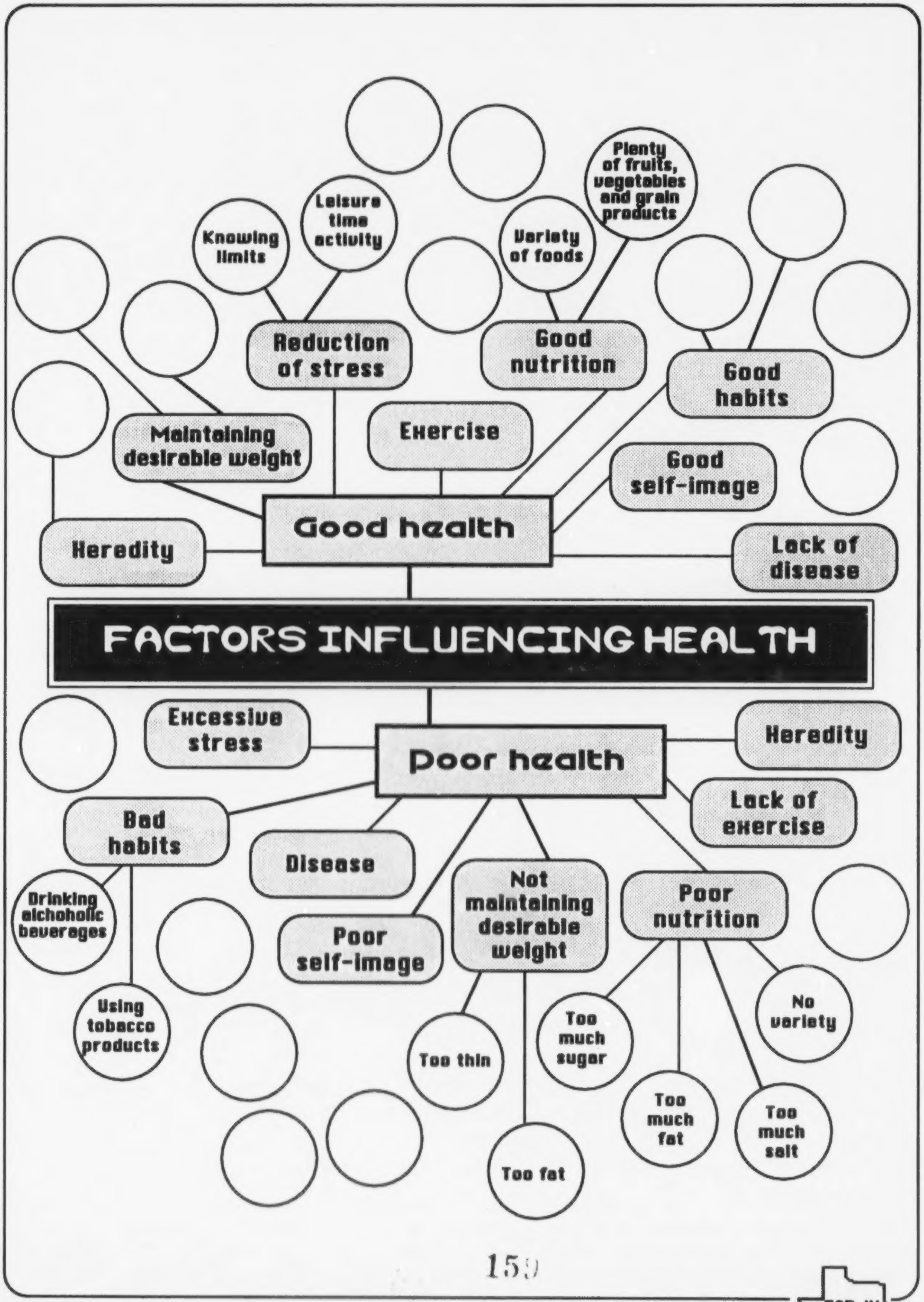
"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Overhead projector

ESSENTIAL ELEMENTS

Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to review examples of daily schedules that include adequate sleep, rest, and regular, vigorous physical activity.
Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to make healthful food choices in context of social environment.


Knowing limits
Leisure time activity
Plenty of fruits, vegetables and grain products
Variety of foods
Reduction of stress
Good nutrition
Good habits
Maintaining desirable weight
Exercise
Good self-image
Heredity
Good health
Lack of disease
FACTORS INFLUENCING HEALTH
Excessive stress
Poor health
Heredity
Bad habits
Lack of exercise
Disease
Not maintaining desirable weight
Poor nutrition
Drinking alchoholic beverages
Poor self-image
Using tobacco products
Too thin
Too much sugar
No variety
Too fat
Too much fat
Too much salt

Health **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify various eating disorders and their symptoms.

ASSESSMENT CRITERIA

Analyze the stories about eating disorders.

ACTIVITIES & STRATEGIES

Discuss the following information about eating disorders:

- There are two main weight-related health problems that are characterized by a preoccupation with weight loss and thinness: anorexia nervosa and bulimia nervosa.
- Eating disorders are serious, and one should be aware of their characteristics and their dangers.
- Eating disorders are complicated and have psychological causes that are often triggered by stress.
- People suffering from these disorders need medical and psychological help.
- Anorexia nervosa is a disorder which first appears as a crash diet to achieve a thin figure. Even when anorexics become thin, they think they are still overweight and continue to lose weight. Some people suffering from this disorder stop eating almost entirely.
- Damaging effects of anorexia are:
  - malnutrition
  - anemia
  - death
- Bulimia nervosa victims characteristically make themselves vomit after they eat as much as they can. This pattern of binge eating and then purging (self-induced vomiting or the continual use of laxatives) in order to rid themselves of food is done in hopes of losing weight. This process can become a habit which can lead to an inability to digest food.
- Damaging effects of bulimia are:
  - irritation of the esophagus
  - abnormal heart rhythms
  - bladder and kidney infections possibly causing kidney failure
  - lacerations or tears to the stomach caused by excessive vomiting
  - tooth damage caused by vomited stomach acid
  - malnutrition
  - death
- Anorexia and bulimia are serious problems and demand professional attention.

Distribute and review the worksheet, "Dangerous Disorders." After completion, discuss the answers with the class.

RESOURCES & MATERIALS

Worksheet: "Dangerous Disorders"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Appendix I: Health Hotline of Agencies and Organizations" (Display the phone number for bulimia and anorexia self-help in your classroom.)

Some characteristics of anorexia nervosa and bulimia nervosa are:

- deterioration of the body; especially muscle wasting and inadequate fat storage
- menstruation stops in females; impotency occurs in males
- skin assumes dry, yellowish tint
- low blood pressure
- heart function becomes inefficient due to the effect of starvation of hormones that regulate blood pressure.
- excessive hair growth on the body
- anemia
- interrupted sleep patterns; bad dreams
- feels fat (distorted perception)

TEACHER TIPS

- **It is imperative that positive messages of respect and value for each individual's unique qualities and talents replace negative messages.**
- **Ask the school or community psychologist to speak to the class about compulsive behaviors.**

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to make healthful food choices in context of social environment.

NAME ______________________________ DATE ________________

Dangerous Disorders

Read the following stories. Using the information discussed in class, identify the eating disorders and symptoms or characteristics in paragraphs A and B. Answer the questions at the bottom of the page on a sheet of notebook paper.

A. Something has changed about **Autumn**. She used to be a happy 12-year-old with a lot of energy and a sparkle in her eyes. She loved to laugh and talk to anyone who would listen to her. She was a runner and hoped to be a model when she got older.

Lately, her friends have been noticing something different about her. She isn't the same person they once knew. She seems obsessed with her weight and won't talk about anything else. Her teeth look different too, almost as though they are decaying. When her friends ask her if she is sick, Autumn appears annoyed by the question, and she responds with a sharp, "No!"

Her parents both work, so Autumn goes home to an empty house. She heads for the refrigerator as soon as she gets home and seems driven to eat everything in sight. Stopping only when her stomach is unable to hold any more, she heads for the bathroom. She kneels in front of the toilet, pulls back her hair, and forces herself to vomit.

Autumn is beginning to notice that she is unable to hold any food down at all. Whenever she eats, her stomach automatically rejects that food, and she is forced to run to the bathroom to rid her body of it.

B. People often stop and stare as **Chris** walks by, sometimes saying, "I have never seen a teenager so thin and yellow!" Chris doesn't believe what they say, and sees a different image reflected in the mirror. "When am I going to lose this weight? Will I always be this fat?"

Food has become an enemy; something to be avoided at all costs. Sleep doesn't seem to bring any rest from this constant worry about weight, and Chris' nights are filled with interrupted sleep and bad dreams.

1. *What eating disorder does Autumn appear to have? What makes you think this?*
2. *What eating disorder does Chris appear to have? What makes you think this?*
3. *Our society places a lot of significance on being thin. We often look to extremely thin models and movie stars for an image of what we should look like. Write a paragraph convincing yourself about the importance of being healthy and physically fit rather than overly concerned about your weight.*

Language Arts Grade 6

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Make wise food choices using the pattern for daily food choices.
- Classify foods using a food grouping system.

ASSESSMENT CRITERIA

Create a nutritionally-balanced menu plan for one day.

ACTIVITIES & STRATEGIES

Discuss the following statements about nutrition:

- Our bodies require nutrients and calories to function.
- We need a variety of foods from the food groups.
- We can make choices regarding what we eat that will help us maintain good health.
- School food service can help us meet some of our nutritional needs because meals are served that provide foods from each of the food groups.

Distribute and review the handout, "Appendix C: A Pattern for Daily Food Choices."

Distribute the worksheet, "Today's Choice." Read the instructions to the students and plan an example of a breakfast menu.

Ask students to share their menus with the class.

- Is the menu nutritious?
- Does it include a variety of foods?
- Do any of the menus have a nontraditional breakfast or lunch?

RESOURCES & MATERIALS

Handout: "Appendix C: A Pattern for Daily Food Choices"

Worksheet: "Today's Choice"

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

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ESSENTIAL ELEMENT

Language arts. Reading. Applying reading skills to a variety of practical situations. The student shall be provided opportunities to follow complex directions; and compare the information on charts, graphs, tables, and lists.

NAME ______________________________ **DATE** ____________________

Today's Choice

Instructions: Using the handout, "Appendix C: A Pattern for Daily Food Choices," and the food lists for breakfast and lunch, create a menu plan for one day that meets all of your food group requirements given on Appendix C. Make sure to pay attention to the serving sizes for one day.

Breakfast Foods

- 1/2 cup cantaloupe wedges
- 1/2 toasted whole-grain bagel
- 1 cup low-fat milk
- 3/4 cup orange juice
- 3/4 cup oatmeal
- 1 scrambled egg
- 1 slice whole wheat toast
- 1/2 grapefruit
- 1 oz. corn flakes
- 1 waffle

Lunch Foods

- 2 ounces baked chicken
- 3/4 cup green beans
- 3/4 cup pineapple chunks
- 1/2 cup enriched rice
- 1 whole-grain roll
- 1 cup low-fat milk
- Cheese sandwich (2 slices of whole-grain bread with 2 ounces of cheese)
- 1 banana
- 1/2 cup carrot sticks
- 1/4 cup sliced cucumbers
- 1 baked potato
- 1/2 cup tossed salad

			Food Groups				
			Vegetables	Fruits	Breads, Cereals, Rice, and Pasta	Milk, Cheese, and Yogurt	Meat, Poultry, Fish, and Alternates
	Food Item	Serving Amount	Number of Servings				
Breakfast							
Lunch							
Dinner							
Snack							
Total the number of servings of each food group. → Record that information here. Make sure your menu reflects the total daily serving needs.							

Language Arts Grade 6

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Explain the role of nutrition and physical fitness in maintaining good health.

ASSESSMENT CRITERIA

- Identify nutrition misinformation associated with athletes.
- Discuss the nutrient needs of the teenaged athlete.
- Analyze nutrition information related to athletic performance.

ACTIVITIES & STRATEGIES

Distribute the pretest, "Test Your Knowledge." Instruct students to:
- mark the statements as a fact (F) or a myth (M)
- keep their pretests for discussion later in the lesson

Point out that some athletes often receive unreliable information about eating to increase performance. It is important to remember the following information:
- The best diet is taken from "A Pattern for Daily Food Choices;" it is not a fad or a new idea.
- Additional carbohydrates may be needed for extra energy. (Students may know them as *power foods.*)
  - Extra carbohydrates prevent the body from using muscle tissue for energy.
  - Potatoes, pasta, rice, and whole-grain breads and cereals supply a larger variety of nutrients than fats and sweets.
- Extra protein is not needed. Excess protein is stored as fat.
- Salt lost through sweating should be replaced by foods or water, not by salt tablets.
  - The body requires 230 mg., or one-tenth of a teaspoon of salt per day. (Illustrate with a comparison of a one-eighth teaspoon of salt passed among the students.)
  - Teens typically consume about twenty times the daily need for salt, or a daily average of two teaspoons.
- Liquids are important.
  - Water regulates body temperature.
  - A quart or more of liquids per day is recommended for athletes.
  - Commercial thirst-quenchers should not be consumed in large quantities.
  - Losing too much water can result in dehydration which prevents normal body functioning during performance.
  - Water, not salt or thirst-quenchers, is all one needs for hydration.

Review and discuss the correct answers to the pretest, "Test Your Knowledge."

RESOURCES & MATERIALS

Pretest: "Test Your Knowledge"

Transparency: "Appendix C: A Pattern for Daily Food Choices"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

"Heart Challenges," Nutrition and the Athlete Guide For The Coach, American Heart Association Schoolsite Program, High School

One-eighth measuring teaspoon

ANSWER KEY

1. **Fact**
2. **Myth (Vitamins do not provide extra energy.)**
3. **Myth (Complex carbohydrates provide the extra energy needed for athletics. Protein takes longer to digest and may not be out of the stomach when competition begins.)**
4. **Fact (The problem is that an athlete will get a quick sugar high, but then the blood sugar level falls to a lower point causing an energy slump.)**
5. **Myth (Americans get more than enough protein in their daily diet to meet the body's needs. Extra protein is stored as fat.)**
6. **Myth (Athletes need to drink plenty of water, but the body's need for sodium is met several times over through our diet. Salt tablets can cause dehydration and can be very dangerous.)**
7. **Fact (Drinking water should be included as a part of every workout.)**

- **Critical Thinking Bonus: Yes, if weight maintenance is desired. If weight loss is desired, calorie level should remain the same as exercise increases; if weight gain is desired, calorie intake should increase as exercise remains the same.**

ESSENTIAL ELEMENT

Language arts. Reading. Using comprehension skills to gain meaning from whatever is read. The student shall be provided opportunities to summarize a selection; understand cause and effect relationships, draw logical conclusions; and make generalizations

NAME ________________________________ **DATE** ________________

Test Your Knowledge

Directions: Read the statements below and decide whether each is a nutritional fact or myth. Circle **F** if the statement is a fact; circle **M** if the statement is a myth.

1. F M The primary energy source for athletic performance is carbohydrates.

2. F M Athletes need extra vitamins.

3. F M Athletes should eat a high-protein meal before their games.

4. F M A candy bar provides quick energy.

5. F M Athletes need extra amounts of protein.

6. F M During strenuous exercise, athletes should take salt tablets to prevent cramps.

7. F M Drinking water should be included as a part of every workout.

Critical thinking bonus—Respond to the following statement:

Calorie intake should increase as exercise amounts increase.

Language Arts Grade 6

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Analyze nutrition information on food labels.

ASSESSMENT CRITERIA

- Recognize the importance of moderating the use of sugar.
- Recognize that sugar has alternative names and may appear more than once on a label.

ACTIVITIES & STRATEGIES

Discuss the over-consumption of sugar in our population. Emphasize that if a food item has a high amount of sugar in it, then sugar will be listed as one of the first three ingredients, or more than once on a label, but with different terminology.

Ask students to brainstorm about alternative names for sugar and list them on the board. Some alternative terms include: sucrose, brown sugar, confectioners' sugar, turbinado sugar, invert sugar, glucose, sorbitol, levulose, lactose, mannitol, honey, corn syrup, corn sweeteners, high-fructose corn syrup, molasses, maple syrup, dextrose, fructose, and maltose.

Distribute the worksheet, "Name that Sugar." After completion, ask the students to discuss the variety of sugars found on the labels.

Divide the class into six groups. Instruct each group to move to one of six stations. Each station should have a minimum of 4 to 5 food labels. Each student should write the name of the food item and the name of a sugar found on three labels while they are at each station. Allow each group about five minutes at a station, then instruct the groups to move to the next station.

RESOURCES & MATERIALS

Worksheet: "Name That Sugar"

Twenty-four to thirty food items with nutrition labels that have sugar or an alternative name for sugar included on the ingredients list

In advance, ask the cafeteria manager for some labels from food containers used in the kitchen.

ESSENTIAL ELEMENT

Language arts. Reading. Applying reading skills to a variety of practical situations. The student shall be provided opportunities to compare the information on charts, graphs, tables and lists.

NAME ______________________________ **DATE** __________________

Name That Sugar

Instructions: Choose three labels per station. Write the name of the food item you are reviewing and the name of a sugar found on the label. You will have approximately five minutes at each station.

The names of sugars used in foods include:
sucrose, brown sugar, confectioners' sugar, turbinado sugar, invert sugar, glucose, sorbitol, levulose, lactose, mannitol, honey, corn syrup, corn sweeteners, high-fructose corn syrup, molasses, maple syrup, dextrose, fructose, maltose.

Station 1		**Station 2**	
Food Item	**Name of Sugar**	**Food Item**	**Name of Sugar**
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.

Station 3		**Station 4**	
Food Item	**Name of Sugar**	**Food Item**	**Name of Sugar**
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.

Station 5		**Station 6**	
Food Item	**Name of Sugar**	**Food Item**	**Name of Sugar**
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.

LESSON OBJECTIVE

Distinguish between reliable and unreliable sources of nutrition information.

ASSESSMENT CRITERIA

- Name reliable sources of nutrition information.
- Identify unreliable sources of nutrition information.

Language Arts Grade 6

6

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Define the word ***nutrition*** on the board. The definition is in "Appendix G: Glossary of Terms."

Ask the students who they consider to be accurate sources of information on nutrition in their communities.

Discuss with the students resources which may be unreliable:
- untrained health and fitness facility employees
- magazine articles about new diets
- newspaper articles about nutrition *fads* or trends (fad—see "Appendix G: Glossary of Terms")
- friends without a degree related to nutrition
- old folk tales (ask the students to share a few they have heard)

Write the list from the opposite column entitled "Write to the Experts" on the board; review it with the class.

Instruct students to:
- Choose an information resource from the list.
- Investigate resources to locate addresses.
- Write letters asking for free literature and information.

Make available to the students at least one copy of pertinent resources from "Appendix I: Health Hotline of Agencies and Organizations."

Suggest that the students use telephone directories and the library as other sources for addresses.

RESOURCES & MATERIALS

"Appendix G: Glossary of Terms"

"Appendix I: Health Hotline of Agencies and Organizations"

Telephone directories

Write to the Experts

- county extension agent (Look in the telephone directory under the county listings for "County Extension Service" or "Texas Agricultural Extension Service.")
- school nurse
- school food service director
- dietitian or nutritionist
- local chapter of the American Dietetic Association
- local chapter of the American Heart Association
- local chapter of the American Diabetes Association
- local chapter of the American Cancer Society
- Texas Beef Industry Council
- Associated Milk Producers, Inc.
- hospitals, health clinics (Brochures and special classes are often available.)
- health hotlines (Look in the telephone directory.)
- pharmacies
- libraries
- national resources (Many have hotline addresses and 800 numbers.)

TEACHER TIP

The students could print the return address to the school in care of the teacher. Discuss the results as they are received. Students could compile a packet of information for their parents.

ESSENTIAL ELEMENT

Language arts. Writing. Applying the conventions of writing to produce effective communications. The student shall be provided opportunities to write legible cursive letters; include in paragraphs a variety of kinds of complete sentences; and use conventional formats (letters and commonly used forms).

LESSON OBJECTIVE

Identify the functions of nutrients as they relate to growth and health.

ASSESSMENT CRITERIA

Explain the functions of minerals in the body.

ACTIVITIES & STRATEGIES

Identify and discuss minerals.
- They are present in almost everything we eat.
- They are present in soil.
- They do many different jobs for the body.

Write the following jobs on the chalkboard, and ask students to guess the mineral that does each job. Randomly list the minerals for them to choose from.
- Builds bones and teeth (calcium).
- Helps control heartbeat and blood clotting (calcium, magnesium, and potassium).
- Builds blood cells (iron, copper).
- Regulates energy flow (iodine).
- Promotes growth and healing (zinc).
- Conducts nerve impulses to muscles (magnesium, potassium).
- Reduces formation of cavities (fluoride).
- Minerals and vitamins work together:
  - Vitamin C enhances iron absorption.
  - Phosphorus must be present before the B vitamins can be used.
  - Potassium assists in metabolizing carbohydrates and proteins.

The minerals make up about 4% of our total body weight. Write the following example on the chalkboard: a 100-pound person contains about four pounds of minerals.

Instruct the students to estimate their own body weight, or go to the clinic and let each student weigh privately. Tell students to calculate how much of their own total body weight is mineral weight.

RESOURCES & MATERIALS

Bathroom scales, if time does not permit the students to go to the clinic to weigh

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ESSENTIAL ELEMENT

Mathematics. Number and numeration concepts. Concepts and skills associated with the understanding of numbers and the place-value system. The student shall be provided opportunities to identify the appropriate equivalent form of a number (fraction, decimal, percent) in application problems.

Mathematics **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

- Discuss the overconsumption of fat as a factor in possible health problems.
- Analyze the percentage of fat in a prescribed adolescent diet.

ACTIVITIES & STRATEGIES

Discuss the following information regarding fat in the diet:
- Fat transports vitamins and acts as an energy source.
- It is not necessary to consume a high-fat diet because the body receives energy from all three energy-yielding nutrients: carbohydrates, fats, and protein. Fat contains nine calories per gram, carbohydrates contain four calories per gram, and protein contains four calories per gram. Excess amounts of these three nutrients not used for body functions are stored as fat.
- Most Americans consume too much fat.
- A diet high in fat can lead to obesity and certain types of cancer.
- High-fat diets can lead to elevated blood cholesterol levels. People with abnormally high blood cholesterol levels are in a high-risk group for advanced atherosclerosis which can lead to heart attacks and strokes. ***Atherosclerosis*** is a hardening of the arteries characterized by a thickening of the artery walls from a build-up of plaque. ***Plaques*** are mounds of lipid matter that accumulate on the inner walls of the arteries. ***Lipid*** is a term used to describe fats, oils, and fat-related substances.
- The amount of fat consumed in one day should be below 30 percent of the total calories taken into the diet.
- Some ways to reduce fat in the diet include:
  - ° reducing fried foods
  - ° reading labels for fat content and choosing lower fat foods
  - ° trimming visible fat from meats
  - ° reducing intake of high fat desserts
  - ° using vegetable protein sources such as dried beans and peas
  - ° choosing low-fat or fat-free menu items and snack foods

Distribute and review the worksheet, "Fat Attack," with the students. After completion, review the answers with the class.

RESOURCES & MATERIALS

Worksheet: "Fat Attack"

"Changing the Course: Intermediate Curriculum," American Cancer Society

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

ANSWER KEY

1. **40 percent**
2. **10 percent**
3. **Students may come up with a variety of answers, including information directly from the class discussion held before the worksheet was distributed.**

Check with the cafeteria manager for labels and/or nutrition information of food products served in school.

ESSENTIAL ELEMENT

Mathematics. Operations and computation. Use of manipulatives to develop the concepts of basic operations on numbers and to apply these concepts to the computational algorithms. The student shall be provided opportunities to use the order of operations to solve multi-step problems using a calculator when appropriate.

NAME ______________________________ **DATE** ______________

Fat Attack

Joshua ate 2,000 calories a day. At lunch, he ate a beef burrito and drank a chocolate shake. He ate a hamburger with onion rings for dinner. The beef burrito had 19 grams of fat; the chocolate shake had 12 grams of fat; the hamburger had 35 grams of fat; and the onion rings had 23 grams of fat. Fat contains 9 calories per gram. Using the method described in the chart below, calculate the percentage of calories Joshua consumed from fat.

Figuring the Percent of Fat in the Diet

Number of grams of fat
multiplied by
9 calories per gram
Total number of calories from fat

Total number of calories from fat ÷ Total number of calories daily X 100 = Percent of calories from fat

Example: An adolescent who eats 2,000 calories per day could figure the percent of his or her diet that was from fat if 80 grams of fat were consumed.

80 grams of fat
multiplied by
9 calories per gram
720 calories from fat

720 calories from fat ÷ 2000 calories per day X 100 = 36 % of calories from fat

Using the chart above, answer these questions:

1. What was the total percentage of calories from fat that Joshua consumed, rounded down to the nearest tenth?

2. Approximately how much more fat was consumed above the maximum recommended 30%?

3. What changes could Joshua have made to lower his intake of fat on this day?

Mathematics **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices when eating away from home.

ASSESSMENT CRITERIA

- Select a nutritionally balanced meal from a menu.
- Practice estimation skills.
- Analyze the nutritional value of meals selected with a limited amount of funds.

ACTIVITIES & STRATEGIES

Using the transparency, "Appendix C: A Pattern for Daily Food Choices," guide the class in selecting one food from the five food groups to create a nutritionally balanced meal.

Tell the students to practice their estimation skills by completing the following activities:
- Divide the class into groups of three.
- Distribute the handouts, paper money, and calculators to the groups.
- Give one student in each group a varied amount of paper money to spend in an imagined multi-choice cafeteria line.
- Tell one student in each group to use a calculator to total the prices of food items that the other student has chosen from the menu or the handout. Be sure the student selecting the food can pay the cashier for the selected menu items.
- Employ another student in the group to analyze the meal to see that each meal consists of foods from each food group.
- Each group will trade roles three times until each student has played each role in the group at least once.

Lead a class discussion on why the ability to accurately estimate such totals is helpful.
- Was it possible to select a balanced meal from the menu with the money available?
- What type of practice can improve estimation ability?
- What nutritious foods can be substituted for more expensive items when total cost of the meal is over the limit?

RESOURCES & MATERIALS

Transparency: "Appendix C: A Pattern for Daily Food Choices"

Handout: "Menu"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

One calculator for each group of three students
Paper money
Overhead projector

TEACHER TIPS

- **Make a poster model of a menu with cafeteria foods and prices.**
- **Choose a balanced meal from a restaurant menu and compare the food items and the cost with the meal that the students have created.**

ESSENTIAL ELEMENT

Mathematics. Number and numeration concepts. Concepts and skills associated with the understanding of numbers and the place-value system. The student shall be provided opportunities to identify the appropriate equivalent form of a number (fractions, decimal, percent) in application problems.

NAME ______________________________ DATE ______________

Menu

Tossed vegetable salad with choice of dressing	*$0.89*
Gelatin salad with whipped cream	*$0.99*
Fruit salad	*$1.25*
Mexican taco salad	*$1.35*
Broccoli and cauliflower salad	*$1.89*

Cheese enchiladas	*$1.99*
New York strip steak (8 oz.)	*$3.99*
Liver and onions	*$2.25*
Stir-fry chicken and vegetables	*$1.99*
Steamed halibut steak	*$2.99*
Baked chicken breast	*$1.99*
Teriyaki chicken with pineapple	*$2.79*

Corn on the cob	*$1.25*
Green beans	*$0.89*
Brussel sprouts	*$0.99*
Okra and tomatoes	*$0.79*
Zucchini	*$1.25*
Mustard greens	*$0.69*
Baked potato	*$1.49*
Steamed broccoli	*$1.25*
Carrots and peas	*$0.99*
Onion rings	*$1.99*

Cornbread	*$0.99*
Whole wheat roll	*$1.09*
Bread pudding	*$1.29*
Buttered tortillas	*$0.79*
Sourdough biscuit	*$0.89*
Garlic toast	*$0.59*

Iced tea	*$0.99*
Hot tea	*$1.29*
Hot chocolate	*$1.99*
Milk	*$0.59*
Soft drink 10 oz.	*$0.99*
Soft drink 16 oz.	*$1.09*
Soft drink 32 oz.	*$1.79*
Water	*No charge*

Dill pickle	*$0.99*
Deviled egg	*$0.99*
Cheese cubes	*$1.79*
Salsa	*$0.39*
Margarine	*$0.25*
Half and half	*$0.25*

Chocolate cream pie	*$1.25*
Brownie	*$1.09*
Chocolate chip cookies	*$0.99*
Strawberry pie	*$1.99*
Pineapple upside-down cake	*$1.79*
Lemon chiffon pie	*$1.49*

Mathematics **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices at snack time.

ASSESSMENT CRITERIA

- Identify the six basic nutrients.
- Differentiate between nutrient-dense and empty-calorie snack foods.

ACTIVITIES & STRATEGIES

Define the word *nutrient* on the board:

- A ***nutrient*** is a life-sustaining substance that nourishes and promotes the growth of the human body.
- The six basic nutrient groups are:
  - proteins
  - carbohydrates
  - fats
  - vitamins
  - minerals
  - water

Display "Appendix E: Food Composition Table" on the overhead projector, or provide copies as a handout.

Explain the difference between foods that are:

- nutrient-dense—the amount of nutrients a food contains compared to its calories.
- empty-calorie—foods that provide calories or energy but little or no nutritive or life-sustaining value. (Eating only empty-calorie foods can cause weight gain; therefore, a person can be overweight and malnourished.)

Explain that foods chosen for meals or snacks should be:

- high in nutrient density
- low in empty calories

Distribute the worksheet, "The Big Picture," and explain the assignment.

Assist the students in charting the nutrient pictures of bite-size fruit snacks and raisins. Use "Appendix E: Food Composition Table" as a transparency or a handout. After completion, discuss student responses to the questions.

RESOURCES & MATERIALS

Worksheet: "The Big Picture"

Handout or transparency: "Appendix E: Food Composition Table"

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Key to chemical symbols on the worksheet, "The Big Picture:"
CHO - Carbohydrate
Vit C - Vitamin C
Ca - Calcium
K - Potassium
Fe - Iron

ANSWER KEY

1. **12 oz. cola**
2. **12 oz. orange juice**
3. **The healthiest snack choice is orange juice.**
4. **A food is nutrient-dense if it is an excellent source of essential nutrients, with few empty calories.**
5. **Empty calories feed the appetite and stomach, but do not supply life-sustaining nutrients.**
6. **Answers will vary.**
7. **Raisins**
8. **Answers will vary.**

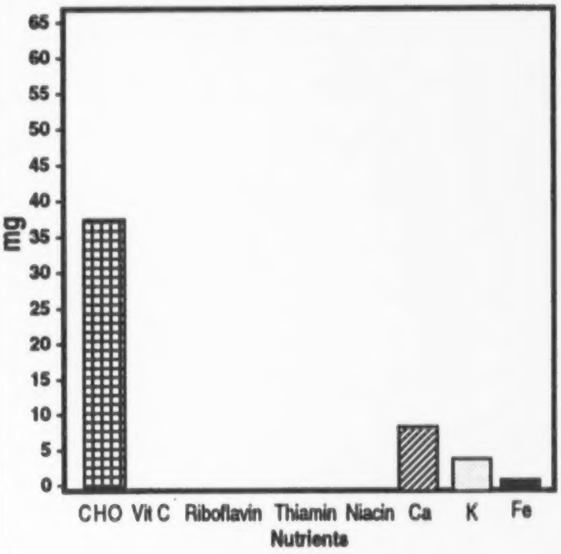
ESSENTIAL ELEMENT

Mathematics. Probability, statistics, and graphing. Use of probability and statistics to collect and interpret data. The student shall be provided opportunities to collect, organize, and interpret data to solve application problems.

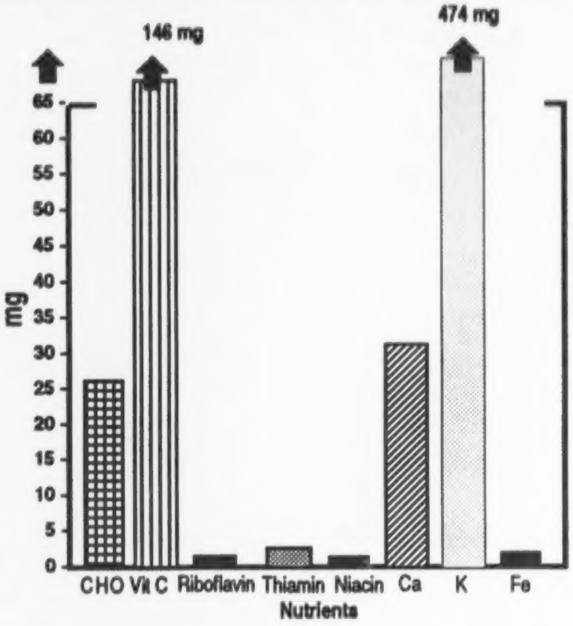
NAME ________________________________ **DATE** ________________

The *Big* Picture

Study these nutrient graphs of two common drinks. Guess what the drinks are, placing your answers in blanks 1 and 2.



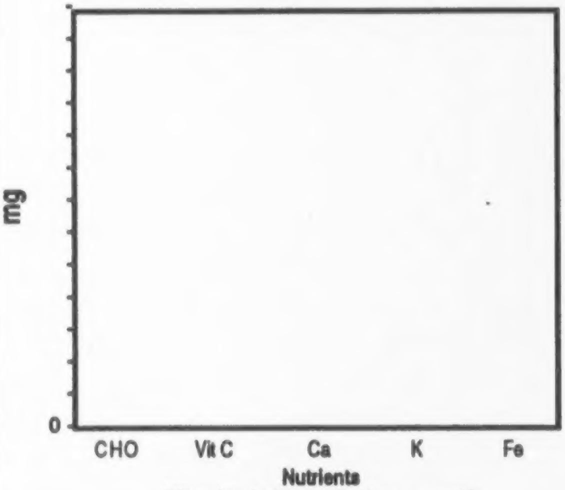
1. ____________________



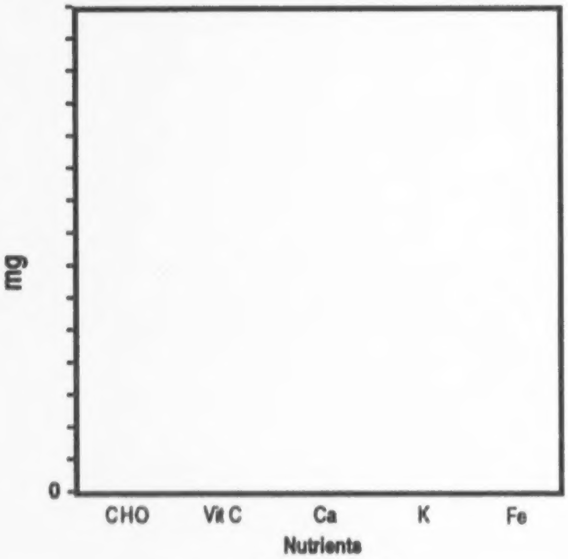
2. ____________________

3. Which nutrient graph above shows the healthiest snack choice? ____________

Below, graph the nutrient composition of these two common snack foods. Then, on the back of this page, write the answers to the questions at the bottom of the page.



Bite-size fruit snacks (one pouch)



Raisins (2/3 cup)

4. What makes foods nutrient dense?
5. Why should empty calories be limited?
6. What changes can you make to improve your snack choices?
7. Which one is the better choice for a nutritious snack?
8. Using Appendix E: Food Composition Table, determine the calories in each food.

Mathematics **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Illustrate ways to avoid excess cholesterol, fat, salt, and sugar.

ASSESSMENT CRITERIA

- Measure the amount of fat in a prescribed diet.
- Identify guidelines for achieving a low-fat diet.
- Describe possible health risks of a high-fat diet.

ACTIVITIES & STRATEGIES

Discuss the following information about fat in the diet:
- Fat performs many functions in the diet. It helps the body transport vitamins and serves as a source of energy. Some fats provide a substance that helps the blood to clot.
- Diets containing excessive amounts of fat can lead to health risks.
- Many Americans are selecting low-fat diets in an attempt to reduce their risk of heart attack, stroke, and cancer.
- A diet low in fat makes it easier to include the variety of foods you need for nutrients without exceeding your calorie needs.
- Eating a diet high in fat makes it more difficult to maintain a desirable weight. Obesity is linked with high blood pressure, heart disease, stroke, diabetes, certain cancers, and other illnesses.
- Health professionals believe that the average American diet contains too much fat, and it is recommended that fat intake be limited to 30 percent of total calorie intake.
- Some commonly-eaten foods have higher fat contents than most people may realize.

Divide the class into six groups. Inform the students that each group will represent the amount of fat found in a daily diet by weighing shortening on a scale.

Distribute the worksheet, "Too Much Fat," and the handout, "Appendix E: Food Composition Table."

Explain to the students who are waiting for the scales, or have completed measuring, that they should work on part B and part C of the worksheet, "Too Much Fat."

After completion, review the answers with the class.

RESOURCES & MATERIALS

Worksheet: "Too Much Fat"

Handout: "Appendix E: Food Composition Table"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Scales that measure in grams
Shortening
Waxed paper or plastic plate
Large spoon and rubber spatula

Answer Key

A. The amount of fat is 159.5 grams
B. 1. Answers will vary.
2. Should describe information given in class discussion.
C. 1. labels
2. frying
3. skim
4. desserts
5. reduce
6. flavor
7. water
8. dressings
9. sautéing
10. snack
11. visible
12. vegetable
13. dairy
14. fat

ESSENTIAL ELEMENT

Mathematics. Measurement. Concepts and skills using metric and customary units. The student shall be provided opportunities to determine the degree of accuracy required in measurement for a specified purpose.

NAME ______________________________________ **DATE** ______________

TOO MUCH FAT

A. This part should be done in small groups.

1. Using "Appendix E: Food Composition Table," look up and record the amount of fat grams contained in the food items listed below.

Breakfast: ____ 2 links sausage
____ 1 fried egg
____ 1 cup whole milk
____ 1/2 cup hash browns
Snack: ____ 1 yeast doughnut
Lunch: ____ 1 cheeseburger
____ 3 ounces of french fries
____ 1 homemade brownie with nuts
Supper: ____ 3 slices of fast food pepperoni pizza
____ Lettuce salad with 3 tbsp. thousand island dressing
____ 1 slice of cherry pie with 1 cup regular vanilla ice cream

2. Add up the amount of fat found in this daily menu. What is the total number of grams? ______

3. Measure that amount of fat in grams by using the scale, utensils, and shortening provided.

B. Answer the following questions after completing the measurement:

1. Imagine sitting down to consume the amount of shortening you have measured. This is essentially what you are doing when you eat a high-fat diet. Describe how this thought makes you feel. How has this experiment affected your perception of eating such a diet?

2. Using information from the classroom discussion, tell why people should avoid consuming over 30 percent of their calories in one day from fat.

C. Read this list of guidelines for achieving a low-fat diet. Fill in the blanks by using the words to the left of the guidelines.

List of words
dairy
desserts
dressings
fat
flavor
frying
labels
reduce
sautéing
skim
snack
vegetable
visible
water

1. Read _ _ _ _ _ _ to learn the fat content of foods.
2. Choose to bake, broil, braise, or steam foods; limit _ _ _ _ _ _.
3. Refrigerate soups and stews before serving. _ _ _ _ off hardened fat.
4. Reduce intake of high-fat _ _ _ _ _ _ _ _ _ .
5. _ _ _ _ _ _ _ consumption of bacon, sausage and luncheon meats.
6. Use herbs, spices, and lemon juice to season and _ _ _ _ _ _ foods.
7. Choose canned fish products packed in _ _ _ _ _.
8. Try using low-fat, low-calorie salad _ _ _ _ _ _ _ _ _.
9. Use nonstick sprays in frying pans before _ _ _ _ _ _ _ _ _ .
10. Choose low-fat or fat-free menu items and _ _ _ _ _ foods.
11. Skin poultry and trim _ _ _ _ _ _ _ fat from lean meats.
12. Use _ _ _ _ _ _ _ _ _ protein sources such as lentils, dried beans, and peas.
13. Use low-fat and nonfat _ _ _ _ _ products.
14. Reduce total dietary _ _ _ intake.

Mathematics **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Analyze nutrition information on food labels.

ASSESSMENT CRITERIA

- Identify the grams of fat on food labels.
- Determine the percent of calories from fat.

ACTIVITIES & STRATEGIES

Ask the students to bring empty dairy product containers, including cheeses, yogurt, ice cream, and milk containers from home.

Point out that different dairy products contain different amounts of fat.

- Excessive consumption of certain foods or compounds in foods can contribute to or promote the development of cancer.
- It is healthier to choose low-fat foods. Foods high in fat:
  - have twice the calories, so a weight problem could develop
  - can increase the incidence of some diseases such as cancer and heart disease

Divide the class into groups of three or four students. Distribute the dairy food containers and the worksheet, "Amounts of Fat in Different Dairy Foods." Explain to the groups:

- that each product should be listed in its appropriate category; all cheeses, for example, should be listed under the "cheese" category
- to exchange containers with other groups

Point out that the worksheet activity will show the students that they can cut down on fat through careful choices.

Ask each group to share their results with the class and compare amounts of fat in different types of milk, cheeses, and other dairy products.

Instruct the students to take their worksheets home and share their discoveries with their families.

Adapted from: "Changing the Course: Upper Elementary Curriculum," American Cancer Society, pp. 49 - 56.

RESOURCES & MATERIALS

Worksheet: "Amounts of Fat in Different Dairy Foods"

"Changing the Course: Upper Elementary Curriculum," American Cancer Society

Assorted dairy product containers

TEACHER TIPS

- **Try to include all forms of milk— skim, 1%, 2%, whole, and chocolate.**
- **Ask students to compare calcium and vitamin content of the different products.**

ESSENTIAL ELEMENT

Mathematics. Probability, statistics, and graphing. Use of probability and statistics to collect and interpret data. The student shall be provided opportunities to collect, organize, and interpret data to solve application problems.

NAME ________________________________ DATE ____________________

Amounts of Fat in Different Dairy Foods

Instructions:

- Write the brand name and serving size of each container of dairy food under the *PRODUCT* column.
- Figure out how many grams of fat there are in one serving.
- Calculate the percentage of the calories from fat by multiplying the fat grams per serving by 9.
- Divide the fat calories by the number of calories in one serving, then multiply by 100.

PRODUCT/SERVING SIZE	GRAMS OF FAT PER SERVING	PERCENT OF CALORIES FROM FAT
Milk/Cream		
1.		
2.		
3.		
4.		
Ice cream		
1.		
2.		
3.		
4.		
Yogurt/Sour cream		
1.		
2.		
3.		
4.		
Cheeses		
1.		
2.		
3.		
4.		

Adapted from: "Changing the Course: Upper Elementary Curriculum," American Cancer Society, pp. 49 - 56.

LESSON OBJECTIVE

Discuss wise consumer food-buying skills.

ASSESSMENT CRITERIA

The student will be able to use unit pricing to determine the best food buys.

ACTIVITIES & STRATEGIES

Define for the students the term ***unit pricing***, a system in which stickers on store shelves give costs per unit of weight or per quantity for each product. From unit prices you can tell which product gives most for the money.

Unit pricing helps you decide the best buy in terms of quantity but does not help you decide the best buy in terms of quality.

Using the transparency, "Unit Pricing," explain to the class the information included on the sticker.
- Product
- Brand name (usually abbreviated)
- Size of the package
- Total price
- Cost per unit

Unit pricing helps you to compare prices of:
- Different brands of the same item
- Different size packages of the same brand (Bigger is not always less expensive per unit.)
- Different forms of a product (fresh, frozen, canned)

Explain the categories of units as shown on the transparency, "Unit Pricing." Pound, ounce, gram, and kilogram are units of weight which measure solid foods like meat, flour, sugar, canned fruits, and vegetables.

Have the students complete the worksheet, "Find The Better Buy."

RESOURCES & MATERIALS

Transparency: "Unit Pricing"

Worksheet: "Find the Better Buy"

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Overhead projector

ANSWER KEY

1. A
2. B
3. A
4. A
5. B

In advance, check with the cafeteria manager regarding a tour of the cafeteria food storage area to observe quantity, packaging, and different forms of food.

ESSENTIAL ELEMENT

Mathematics. Measurement concepts and skills using metric and customary units. The student shall be provided opportunities to use metric and customary units in applications (no conversion between systems of measure).

Unit Pricing

Sample shelf tag:

YOU PAY: **$1.20**	**YOU PAY:** **$0.15** **PER OUNCE**
Frozen **8 oz. ORANGE JUICE**	

Categories of Units—which may be seen in the grocery store (on products and sometimes on the shelves)

Units of weight which measure solid foods:

- Pound
- Ounce
- Gram
- Kilogram

Units of volume which measure liquids:

- Pint
- Quart
- Gallon
- Fluid Ounce
- Liter
- Milliliter

NAME ______________________________ **DATE** ____________________

Find the Better Buy

Circle the best buys in each of the following examples:

	A.	B.
1.	YOU PAY $3.60 UNIT PRICE 30 ¢ per ounce 12 oz. Corn Flakes	YOU PAY $3.50 UNIT PRICE 35 ¢ per ounce 10 oz. Corn Flakes
2.	YOU PAY $ .85 UNIT PRICE 85 ¢ per quart 1 quart milk	YOU PAY $1.50 UNIT PRICE 75 ¢ per quart 1 half gallon milk
3.	YOU PAY $1.00 UNIT PRICE 20 ¢ per pound 5 pounds flour	YOU PAY $ .60 UNIT PRICE 30 ¢ per pound 2 pounds flour
4.	YOU PAY $5.00 UNIT PRICE $2.50 per pound 2 pounds ham	YOU PAY $3.00 UNIT PRICE $3.00 per pound 1 lb. ham
5.	YOU PAY $1.04 UNIT PRICE 13 ¢ per fl. ounce 8 fl. oz. catsup	YOU PAY $1.60 UNIT PRICE 10 ¢ per ounce 16 fl. oz. catsup

LESSON OBJECTIVE

Discuss wise consumer food-buying skills.

ASSESSMENT CRITERIA

Analyze the expense of certain food items by figuring their cost through unit pricing.

ACTIVITIES & STRATEGIES

Discuss with the students the following information about unit pricing:

- Most supermarkets have unit pricing to help the consumer determine which product gives the most food for the money.
- The unit price is shown on a sticker right below the product. The sticker tells how much the product costs per unit. The unit may be a unit of weight, for example, a gram or a kilogram, an ounce or a pound. It may be the cost per unit of volume, for example, a liter or a milliliter, a quart or a fluid ounce. The best buy in terms of quantity can be determined by comparing the unit price of one item with that of another.
- The price per unit can be figured by dividing the price by the unit of measure. Example: if a can that contains 12 fluid ounces of juice costs $.50, then to figure the price per ounce, $.50 would be divided by 12 to get $.04 per ounce if the answer was rounded to the nearest hundredth.

Distribute and review the worksheet, "More for My Money," with the students. After completion, discuss the best buy in terms of nutrient value.

Extension:
Investigate the packaging and preparation effects on product price:

- convenience products vs homemade products
- buying in volume

Mathematics **Grade 6**

6

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Worksheet: "More for My Money"

ANSWER KEY

1. $.25
2. $.15
3. $.05
4. $.27
5. $.06 per serving
A. The popcorn is a better buy.
B. The apple is a better buy.
C. You would be able to determine what food items offer the most in terms of quantity for the amount of money you are spending on those items.
D. Kernels = $.09 (Best buy)
Microwave = $.15

In advance, invite the food service director to class to discuss bidding, how they purchase foods, and how they figure the cost of the school menus.

ESSENTIAL ELEMENT

Mathematics. Numbers and numberation concepts. Concepts and skills associated with the understanding of numbers and the place value system. The student shall be provided opportunities to explore relationships between whole numbers, fractions, decimals, and percents.

NAME ______________________________ DATE ______________

More for My Money

Instructions: Compare the price per unit of certain food items to determine which ones offer the best buy. In the box below, you will find an example of how unit pricing is determined.

> *If one pound of carrots costs $.33, then the cost after rounding to the nearest hundredth would be $.02 per ounce. This figure is determined by dividing $.33 by the number of ounces in one pound which is 16, and then rounding that number to the nearest hundredth.*

Determine the unit price of the following food items, round those numbers to the nearest hundredth, and then answer the follow-up questions on the back of this page.

1. If one four-ounce bag of potato chips costs $1.00, and one ounce equals one serving, what is the cost per serving?

2. If one bag of microwave light popcorn costs $.50, and there are 3.3 servings per bag, what is the cost per serving of the popcorn?

3. If one pound of apples costs $.79, what is the cost per ounce?

4. If one 2-ounce candy bar costs $.54, what is the cost per ounce?

5. If a one-pound bag of popcorn kernels costs $.79, and 1 oz. equals one serving, what is the cost per serving?

Follow-up questions:

A. Is popcorn or potato chips the better buy?

B. Is an apple or a candy bar the better buy?

C. If you were in charge of doing the grocery shopping for your family, and you had a limited amount of money to spend, why would the ability to figure out the price per unit be valuable?

D. Compare the cost per serving of the popcorn kernels and the microwave popcorn. The cost of the oil to use with the popcorn kernels would be $.03 per serving. Which would be the best buy?

Science **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Describe the relationship of food to energy, growth, and health.

ASSESSMENT CRITERIA

- Explain the function of carbohydrates in the body.
- Observe the presence of starch in foods.

ACTIVITIES & STRATEGIES

Define carbohydrate. ***Carbohydrate*** is a term applied to sugars, starches, and fiber. Sugars and starches are used in the body cells to produce energy. Starch is a complex carbohydrate composed of a chain of sugar molecules. Foods with a high-starch content can be called high-energy foods.

Place a paper-thin section of a raw potato on a glass slide and observe it under a microscope. Notice that the potato cells are shaped like blocks.

Observe the starch cells which look like oyster shells.

Boil another potato until it is soft. Shave off a piece of it and observe it under the microscope. Ask the students these questions:

- What has happened to the starch? (Much of it will have disappeared.)
- What happened to it? (It broke down into sugar molecules.)
- How did it happen? (It broke down into maltose and then into glucose.)

Detect the presence of starch in food by using the iodine test. Do the iodine test before and after the potato is cooked.

Prepare samples of a number of different foods. Put one drop of iodine on the food sample. The drop will turn purple if starch is present.

Distribute and review the worksheet, "Testing for the Presence of Starch," with the students.

After the worksheet is completed, discuss the results of the starch experiments and restate the function of carbohydrates in the body.

RESOURCES & MATERIALS

Worksheet: "Testing for the Presence of Starch"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Microscopes
Microscope slides
Iodine
Eyedropper

Foods for testing:
potatoes
bread
apple
lettuce
celery

TEACHER TIP

****Caution** Iodine is poisonous; ingestion could be fatal.**

ESSENTIAL ELEMENT

Science. Identify and manipulate the conditions of investigations. The student shall be provided opportunities to design and conduct an investigation to test hypotheses.

NAME ______________________ **DATE** ______________

Testing for the Presence of Starch

Write the name of each food item used for the experiment. After you look for the presence of starch in each food, indicate whether starch was present by writing a + if you found starch and a - if you did not find starch.

Food Sample	**Test Results (+) Starch is present** **(-) No starch is present**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

In the space below, draw the cell shapes you observed under the microscope.

Science **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify the functions of nutrients as they relate to growth and health.

ASSESSMENT CRITERIA

Demonstrate the use of vitamin E as a preservative.

ACTIVITIES & STRATEGIES

Discuss these facts about vitamin E. Vitamin E:

- protects substances from oxidation. Oxidation is a chemical change that occurs when a substance combines with oxygen.
- protects the red blood cells and lung tissue.
- retards spoilage due to oxidation in certain foods.
- helps retain vitamin A.
- in the diet primarily comes from vegetable oils (salad dressing, margarine) and green vegetables.

Demonstrate how vitamin E affects the oxidation of lemon oil.

1. Cut two thin pieces of lemon rind and put them on separate pieces of filter paper with the skin side down.
2. Hammer the lemon rind until the oil is extracted onto the paper. Wait 10 minutes.
3. Cut open a vitamin E capsule and spread the liquid over one of the samples.
4. Leave both samples exposed to the air for several hours.
5. The lemon oil with the vitamin E will smell sweet; while the lemon oil without the vitamin E will smell sour.

Conclusion: When oxygen combines with oils, the oils start to smell sour. Vegetable oil manufacturers slow the process of oxidation by adding vitamin E to their products.

Review:

- What is oxidation?
- Why is vitamin E important in the diet?
- Explain how vitamin E is used as a preservative.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Edcuation" found in the introductory section of *ESR IV*

Whole lemon
Vitamin E capsule
Sharp knife
Cutting board
Coffee filters or paper towels
Hammer

ESSENTIAL ELEMENT

Science. Acquire data through the senses. The student shall be provided opportunities to observe phenomena and apply knowledge of theories, facts, and concepts from life, earth, and physical sciences.

LESSON OBJECTIVE

Explain the importance of safe handling of food.

Science Grade 6

6

TEXAS EDUCATION AGENCY

ASSESSMENT CRITERIA

- Create an environment that will allow microorganisms to grow.
- Identify the types of microorganisms.
- Propose a method for the prevention of microorganism growth on food.

ACTIVITIES & STRATEGIES

Discuss the fact that microorganisms are too small to see as they float around us. They lie on every surface, yet when they are allowed to grow on food, they can cause food-borne illness like vomiting and diarrhea, and even cause death in the people who eat that food.

Emphasize that there are ways to prevent food-borne illness. Make sure that:

- everything used to prepare and store food is clean including utensils, cutting boards, and hands.
- food is properly covered.
- food is stored at the correct temperature. Room temperature encourages microorganisms to grow. Refrigerate foods and serve foods at the correct temperature, hot or cold.
- food is not stored too long. It can spoil even when refrigerated if allowed enough time.
- expiration dates have not expired.
- cans are not swollen or dented.

Distribute and review "Colorful Colonies: Microorganism Growth Experiment," with the students before setting up the experiment.

Assign a time each day for the students to observe the growth of microorganisms on the food. Continue observing until the colonies reach a point when conclusions can be drawn and questions answered regarding the color and shape of the microorganisms.

Instruct students to complete the worksheet, "Colorful Colonies: Microorganism Growth Experiment."

After completion, review the answers with the class.

RESOURCES & MATERIALS

Worksheet: "Colorful Colonies: Microorganism Growth Experiment"

Pie plate and cover
Bananas
Luncheon meat
Cheddar cheese
Moist bread

TEACHER TIP

Caution: When investigating with bacteria or mold cultures, it is important to enforce this caution: Pathogenic bacteria sometimes multiply and become potentially dangerous, and some children are allergic to some forms of concentrated molds. Insist that no culture be opened at any time except with your direction to do so.

In advance, check with cafeteria manager to explain hygiene procedures followed by cafeteria workers, or arrange a tour of the cafeteria to observe hygiene practices and safe food storage.

ESSENTIAL ELEMENT

Science. Acquire data through the senses. The student shall be provided opportunities to observe properties and patterns of objects, organisms, and events in the environment.

NAME ______________________________ **DATE** ____________________

COLORFUL COLONIES: MICROORGANISM GROWTH EXPERIMENT

Instructions:

1. Place a piece of food on a disposable aluminum pie tin and set it in the open air for half an hour. Suitable foods are: pieces of banana, moist bread, luncheon meat, or cheddar cheese.
2. Place plastic wrap or glass covers over the food.
3. Put the pan of covered food in a warm, dark place, and observe it at the same time every day.
4. Make sure the food remains covered. Do not handle the food directly.
5. Notice the spots on the food that appear in two or three days.
   - Slick, shiny, round spots are bacteria. Bacteria colonies may be red, yellow, or orange.
   - Mounds of tiny threads are molds. Mold colonies may be black, white, or green.
   - Middle-sized organisms are of the fungus group of nongreen plants.

Observe and Answer:

On the third or the fourth day after setting up the experiment, **observe** the colonies of the microorganisms that have been allowed to settle on the food and grow at room temperature.

Please refer to the instructions, which will give you an idea of the types of organisms that may have grown in the colonies you see on the food. **Answer** the following questions on the back of this worksheet.

1. Describe the type of organisms you see. What color are they? What shape are the colonies?

2. Based on the information given on this worksheet, what type of microorganism may have grown on your sample?

3. These microorganisms grew because you exposed them to the air and allowed them to grow on moist food at room temperature over a period of time. Propose a way to prevent the growth of these types of microorganisms on food.

4. Why are they harmful?

5. Do they smell?

Science **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Explain the importance of safe handling of food.

ASSESSMENT CRITERIA

- Observe mold spores.
- Recognize that mold is a microorganism.

ACTIVITIES & STRATEGIES

Explain microorganisms and molds to the class.

- *Microorganisms*: tiny living cells that can be seen only with a microscope.
- *Molds*: furry-looking fungi that can grow on almost any food under almost any conditions. If left uncovered, food can be exposed to mold spores that float around in the air. Mold is a microorganism that is used to make penicillin. Mold is also used to make some cheeses such as blue cheese.

Ask the students the following questions:

- Is there more mold outside or inside a room or building?
- Is there more mold in the cafeteria, school kitchen, bath room, or classroom?

Perform the following investigation to determine the amount of mold in the air at various locations.

1. Cut five pieces of cellophane tape about three inches long. Staple or tape them to pieces of cardboard with the sticky side facing out in order to catch mold spores.
2. Put the cardboard mold catchers in different locations around the school. Leave overnight.
3. The next day, collect the mold catchers and cover each with plastic wrap to keep out additional material.
4. Look at each piece of tape with a microscope to determine which piece has collected the most spores.
5. Record your data on the worksheet, "Spying Spores."

Show examples of food that have mold on them such as cheese or bread.

Review and discuss food safety guidelines pertaining to mold. Advise students not to cut mold away and eat the remaining food. Discard all food with mold.

RESOURCES & MATERIALS

Worksheet: "Spying Spores"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Pieces of cardboard
Cellophane tape
Microscopes
Plastic wrap
Examples of food that have mold on them such as cheese or bread

In advance, ask the cafeteria manager to discuss with the class the steps taken by the cafeteria staff to prevent mold.

ESSENTIAL ELEMENTS

Science. Draw logical inferences, predict outcomes, and form generalized statements. The student shall be provided opportunities to make inferences based on data.

Science. Identify and manipulate the conditions of investigations. The student shall be provided opportunities to identify the variables held constant, those variables being manipulated, and the variables responding in an investigation.

NAME ________________________ **DATE** ____________

Spying Spores

Procedure:

1. Cut 5 pieces of cellophane tape about three inches long.
2. Staple or tape them to pieces of cardboard with the sticky side out.
3. Put the cardboard mold catchers in different locations around the school. Leave overnight.
4. The next day, collect the mold catcher, and cover each with plastic wrap to keep out additional material.
5. Use a microscope to see which piece of tape has collected the most spores.
6. Record your data below.

Hypothesis: *(Where do you think the most spores will be located?)*

____

Location of mold spores	*Number of spores on each 1/2 inch of tape*				
1.					
2.					
3.					
4.					
5.					

Conclusion:

____

____

____

LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

- Discuss the effects of too much fat in the diet.
- Demonstrate which foods have a high fat content.

Science **Grade 6**

6

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Many Americans are selecting low-fat diets in an attempt to reduce their risk of developing coronary heart disease and cancer. It is recommended that no more than 30 percent of our total daily calories come from fat. Excess carbohydrates not used for energy, excess proteins, and dietary fat are stored by the body as fat.

Discuss the difference between saturated and unsaturated fats.

- Saturated fat is solid at room temperature and is found in animal products. It is also found in two vegetable oils, palm oil and coconut oil. Saturated fat should be restricted to 10 percent or less of total caloric intake.
- Unsaturated fat is liquid at room temperature. It generally comes from plant sources.
- Some foods high in saturated fat include bacon, beef, butter, doughnuts, coconut oil, palm oil, chocolate, and high-fat cheese.
- Some foods high in unsaturated fat include nuts, soft margarine, olives, vegetable oil, avocado, canola oil, safflower oil, and corn oil.

Demonstrate a way to test for fats in food by rubbing a piece of food on a brown paper bag. Hold the bag up to a light to show that the fat makes the bag translucent or allows light to come through the paper.

Divide students into groups of two, and give each group a piece of paper bag and a sample of food that you know is high in fat such as a cookie or nuts. Let them follow the procedure you demonstrated so that they can see the absorption of the fat into the paper. Give the groups samples of other foods to test such as cheese, vegetables, doughnuts, potato chips, and breads.

Ask students to make a list of the foods that they ate yesterday and circle all the foods with high-fat content. Remind them that fried foods absorb fat from the cooking oil. Discuss alternative foods that have no fat or less fat than the ones they listed. Remind students to substitute saturated fats with unsaturated fats and to keep the total fat intake to 30% or less of their caloric intake.

RESOURCES & MATERIALS

For the formula for figuring the percentage of fat in the diet and instructions on maintaining a low-fat diet, consult the "Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Six-inch square pieces of brown paper bags

Food samples:
- Cheese
- Vegetables
- Doughnuts
- Potato chips
- Breads
- Nuts
- Cookies

ESSENTIAL ELEMENT

Science. Draw logical inferences, predict outcomes, and form generalized statments. The student shall be provided opportunities to develop hypotheses.

LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

- Distinguish between complete and incomplete proteins.
- Recognize that proteins are composed of amino acids.

ACTIVITIES & STRATEGIES

Proteins are comprised of compounds called amino acids. There are 22 different amino acids. Thirteen are manufactured in the body and nine must be supplied by the food we eat. These nine are called essential amino acids because the body cannot make them; therefore, they must be obtained from food.

Foods that contain all nine of the essential amino acids are called complete proteins. Foods that do not contain all nine are called incomplete proteins.

Incomplete proteins are found in plant foods such as grains, seeds, peas, and beans. They are good sources of protein when eaten with complete protein foods or with certain other plant foods such as:

- beans and rice
- corn tortilla and beans
- peanut butter on wheat bread

The cells in the walls of the stomach secrete the enzyme pepsin and a weak hydrochloric acid which combine to break down protein into amino acids. Investigation:

1. Fill four test tubes one-fourth full of water and place a small piece of cooked egg white into each one.
2. Number the test tubes 1 through 4 and add the following materials: #l - add nothing, #2 - ten drops of 10% hydrochloric acid, #3 - two eyedroppers of 1% pepsin solution, #4 - ten drops of hydrochloric acid and two eyedroppers of pepsin.
3. Set all 4 test tubes in a warm place for 24 hours.
4. Discuss the changes that have occurred in the test tubes. Results: Neither the acid nor the pepsin alone will break down the protein into amino acids. Test tube #4 should be the only one where digestion of the egg white has occurred.

Optional activity: use cooked beans such as canned pinto beans or navy beans which would be an incomplete protein for an additional investigation.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Four test tubes
Cooked egg white
10% hydrochloric acid
One percent pepsin solution
Eyedropper

TEACHER TIP

**** CAUTION ****

Hydrochloric acid is a dangerous chemical. Students should be informed of its dangers and be well-supervised when using hydrochloric acid in the classroom.

ESSENTIAL ELEMENT

Science. Identify and manipulate the conditions of investigations. The student shall be provided opportunities to identify the variable held constant, those variables being manipulated, and the variables responding in an investigation.

Science **Grade 6**

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

Demonstrate the amount of water in food sources.

ACTIVITIES & STRATEGIES

Water is necessary in the body for many reasons.

- It acts as a solvent for nutrients and hormones.
- It transports nutrients to the cells.
- It rids the body of waste products.
- It lubricates the joints of bones.
- It facilitates the passage of food through the digestive system.
- It regulates body temperature through heat, perspiration, excretion, and exhalation.

Emphasize to the students that water is one of the most important nutrients; one can live without food for up to five weeks, but can only live a few days without water. Water makes up about 55-60% of the total body weight. The daily diet should include at least eight 8-ounce glasses of water per day. A great deal of the water we consume comes from the foods we eat.

Distribute the worksheet, "Percentage of Water," and perform the investigation using the steps of the scientific method to demonstrate the percentage of water in certain foods.

- Question: Which food has the most water weight?
- Hypothesis: Each student should make a guess.
- Materials: toaster oven, food sources, pan, scale
- Procedure:
  1. Weigh each food and record the weight.
  2. Cook the food on low heat for two hours (200° F.)
  3. Weigh the food again and record the weight.
  4. Divide the final weight by the original weight and multiply by 100 to obtain the percentage of water in the food.

After completion, review the answers with the class.

Ask students to list some foods with a high water content. (See the list in the opposite column.) Discuss ways the students can increase their daily water intake through foods, and remind them to increase their intake of liquids also.

RESOURCES & MATERIALS

Worksheet: "Percentage of Water"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Pan
Toaster oven
Balance/scales
Food sources such as apple, bread, carrot, and celery

Water content of some foods:

Lettuce	97%
Watermelon	93%
Potatoes	80%
Chicken	63%
Cheddar Cheese	37%
Bread	36%
Crackers	2.4%

ESSENTIAL ELEMENT

Science. Identify and manipulate the conditions of investigations. The student shall be provided opportunities to identify the variables held constant, those variables being manipulated and variables responding in an investigation.

NAME ______________________ **DATE** ______________

Percentage of Water

Question: ______________________

Hypothesis: ______________________

Materials: *food sources, pan, oven, scale*

Procedure:

1. *Weigh each food before cooking it and record the weight on the chart.*
2. *Cook the food for two hours on low heat in an oven. (200° F)*
3. *Weigh the food again and record the weight.*
4. *Divide the final weight by the original weight. Multiply by 100 to obtain percentage of water.*

FOOD SAMPLE	ORIGINAL WEIGHT	FINAL WEIGHT	PERCENTAGE OF WATER
1.			
2.			
3.			

Conclusion: *Was your hypothesis correct?*
Which food source contained the highest percentage of water?

____

____

____

____

LESSON OBJECTIVE

Explain the role of nutrition and physical fitness in maintaining good health.

ASSESSMENT CRITERIA

- Discuss the relationship between diet, exercise, and heart disease.
- Explore the major parts of the heart.

ACTIVITIES & STRATEGIES

Good nutrition has a role in the prevention of heart disease. High blood cholesterol and obesity are two factors that lead to atherosclerosis. Atherosclerosis is caused by a narrowing of the arteries due to plaque buildup.

Plaque is composed of lipid or fat-related substances. See the "American Heart Association Eating Plan" in the "Instructor's Resource Guide."

Distribute the handout, "Take a Fantastic Journey," to assist with the discussion of the heart.

Purchase an animal heart (beef, sheep, or veal) at the grocery store. Take the refrigerated heart to class.
- With sharp scissors, cut through the muscle on both sides and around the bottom of the heart.
- Do not cut the top of the heart where the vessels go in and out.
- Depending on the detail of your study, locate:
    - ° the right and the left ventricles
    - ° the aorta
    - ° the right and the left atrium
    - ° valves
    - ° major arteries
    - ° veins
- Compare the thickening of the chamber walls.
- Follow the flow of the blood.

Ask the students these questions:
- Why must the ventricle wall be the largest and strongest?
- How does the composition of the blood in the right side differ from the left side?
- Where has the blood come from and where is it going?
- Why do diagrams of the heart show veins as blue and arteries as red?

Continued in the next column.

RESOURCES & MATERIALS

Handout: "Take A Fantastic Journey"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Getting to Know Your Heart," American Heart Association Schoolsite Program, Upper Elementary

Discuss how diet and fitness affect the heart.
- Extra weight forces the heart to work harder.
- Heart that is in good condition beats fewer times to pump an equal amount of blood.
- If arteries are clogged, the heart has to beat harder to get the blood through the vessels.
- A healthy diet and exercise both contribute to a healthy heart and to lowering cholesterol levels in the blood.

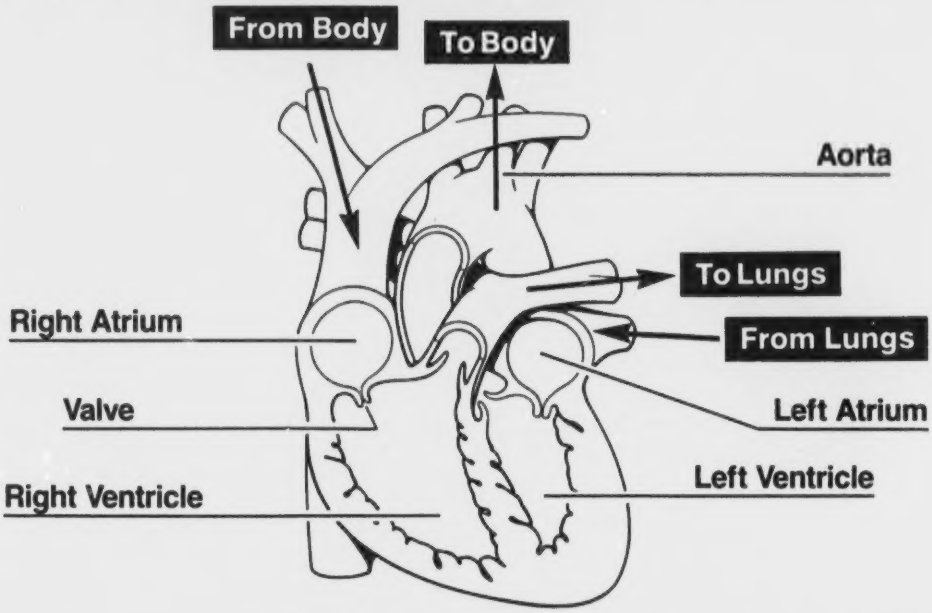
TEACHER TIPS

- **Observe students closely; watch for signs of paleness and fainting. Have capsules of ammonia accessible.**
- **Make sure the room is well-ventilated.**

ESSENTIAL ELEMENT

Science. Draw logical inferences, predict outcomes, and form generalized statements. The student shall be provided opportunities to draw conclusions from observed data.

TAKE A FANTASTIC JOURNEY
–INTO–
THE VERY HEART OF YOUR CIRCULATORY SYSTEM


From Body
To Body
Aorta
To Lungs
From Lungs
Right Atrium
Valve
Left Atrium
Left Ventricle
Right Ventricle

The heartiest muscle in your body flexes 24 hours a day.

Believe it or not, the strongest muscle in your body is the heart. With the big job it has to do, it has to be stronger than any others. Your hard-working heart has to pump blood to your brain cells, nerve and bone cells, and all of the millions of other cells in your body night and day for your whole life — without a break!

To get an idea of your heart's power, hold a tennis ball in your hand and use the muscles in your arm and hand to squeeze it several times as hard as you can. Give it all you've got. You'll feel just how much strength your heart needs to pump your blood through your body — around the clock.

Social Studies Grade 6

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Investigate the customs of Asian cultures.
- Develop an appreciation for foods from different cultural groups.

ASSESSMENT CRITERIA

- Identify Japanese foods in a crossword puzzle.
- Interpret reasons why certain foods are important in the Japanese diet.

ACTIVITIES & STRATEGIES

Discuss the following information regarding Japanese cuisine with the students:

- Farming is difficult in Japan and living conditions are crowded in lowlands because three-fourths of Japan's land area is hilly or mountainous.
- Japan has always had trouble providing enough food for its population due to a variety of reasons including limited agricultural space; therefore, Japan must import about 20 percent of its food.
- Rice is the most important crop in Japan. Rice production uses over half of the tillable land.
- Other important crops include soybeans, rye, barley, wheat, and sweet potatoes.
- Japanese farmers raise tea bushes along the terraced hillsides.
- Fruits grown in Japan include: peaches, pears, apples, persimmons, and cherries.
- Vegetables grown in Japan include: pumpkins, squash, cabbage, turnips, carrots, spinach, onions, lettuce, beans, large radishes, cucumbers, and onions.
- Traditionally, the Japanese have raised little livestock because land is scarce and Buddhism forbids the eating of meat.
- Most of the protein in the Japanese diet comes from seafood such as sardines, salmon, herring, yellowtail, cuttlefish, shark, and tuna.
- There are four basic ingredients used in Japanese cookery: rice, soybeans, fish, and seaweed.

Discuss how this type of diet, which is low in fat and high in fiber, may affect the health of the Japanese people.

Distribute and review the worksheet, "Foods from Japan," with the students.

After completion, discuss the answers to the puzzle and the follow-up answers.

RESOURCES & MATERIALS

Worksheet: "Foods from Japan"

"Asian Americans in Texas" found at the beginning of sixth grade *ESR IV* lesson plans

ANSWER KEY

A. Crossword Puzzle

Across	**Down**
6. seafood	**1. soybean**
7. konbu	**2. shoyu**
9. sashimi	**3. sushi**
10. terraced	**4. gohan**
12. tofu	**5. mountainous**
13. nori	**6. scarce**
	8. miso
	11. dashi

B. Questions

1. **Japan is an island nation. The people have the opportunity to obtain fish and shellfish from the ocean.**
2. **They have limited agricultural space so they use the hillsides for crops that are adaptable to that type of farming.**
3. **Japan has little available agricultural land. The Japanese people choose to live in crowded conditions and leave as much land available as possible for farming. If they used more space for homes, they would reduce the amount of land available for agriculture and would need to import more food to supply their needs.**

In advance, ask the cafeteria manager to include foods in a menu or plan a meal with foods from Japan. Have a Japanese Day.

ESSENTIAL ELEMENT

Social studies. Local, state, national, and world geography. The student shall be provided opportunities to describe the impact of physical features on selected cultures, past and present.

BEST COPY AVAILABLE

NAME ______________________________ **DATE** ________________

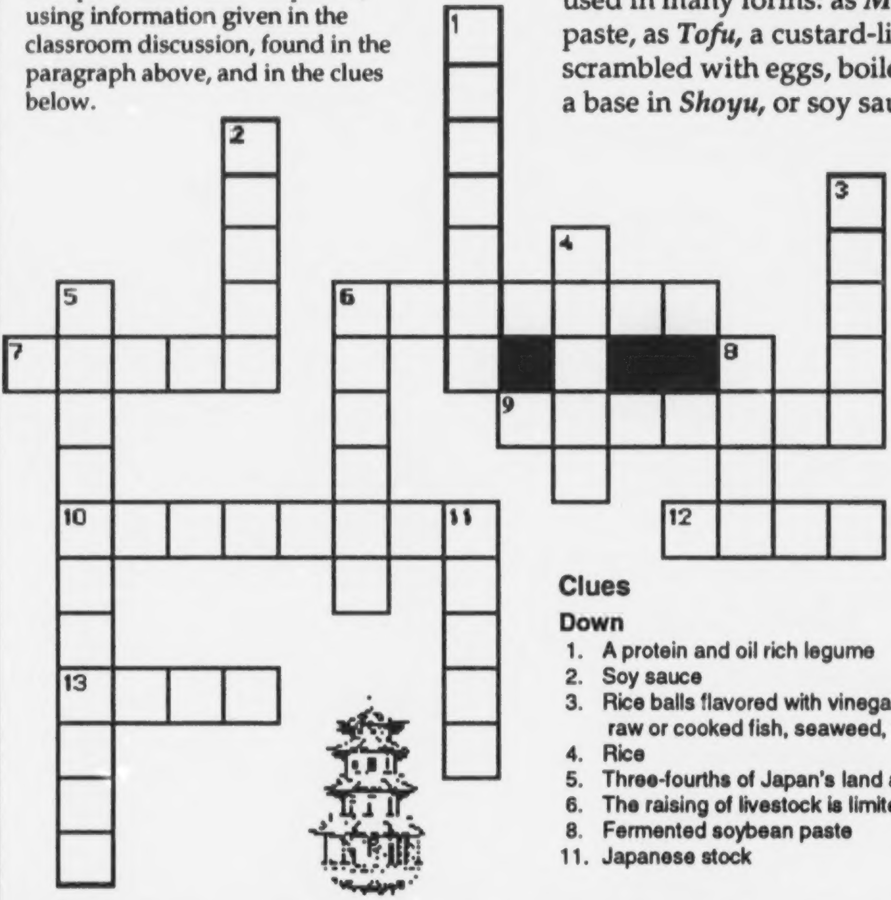
Foods from Japan

The Japanese diet is simple by necessity. The land and sea provides fruits, vegetables, legumes, rice, seaweed, and fish. Rice, fish, seaweed, and soybeans are basic to Japanese cookery.

Gohan (rice) is the Japanese word for meal. This indicates how important rice is to the Japanese diet. It is usually served steamed and plain. Fish and shellfish must be fresh. ***Sashimi*** are popular. They are raw fillets of fish eaten with sauce or alone. ***Sushi*** are rice formed into balls and flavored with vinegar and served with strips of raw or cooked fish, seaweed, vegetables, or eggs.

Nori is a variety of seaweed that is rolled around fish or rice. Dried kelp or ***Konbu*** is used in ***dashi***, a Japanese stock. The soybean (a protein and oil-rich legume) is used in many forms: as ***Miso***, a fermented paste, as ***Tofu***, a custard-like cake that can be scrambled with eggs, boiled or broiled, and as a base in ***Shoyu***, or soy sauce.

A. Instructions
Complete the crossword puzzle, using information given in the classroom discussion, found in the paragraph above, and in the clues below.



Clues
Across

6. Where most of the protein in the Japanese diet comes from.
7. Dried kelp
9. Raw fillets of fish eaten with sauce or alone.
10. What type of hillside farming is used for raising tea?
12. Custard-like cake made from soybeans
13. A variety of seaweed that is rolled around fish or rice.

Clues
Down

1. A protein and oil rich legume
2. Soy sauce
3. Rice balls flavored with vinegar and served with strips of raw or cooked fish, seaweed, vegetables or eggs
4. Rice
5. Three-fourths of Japan's land area is hilly or this.
6. The raising of livestock is limited because land is what?
8. Fermented soybean paste
11. Japanese stock

B. Follow-up questions (to be answered on the back of this or on a sheet of notebook paper.)
1. Why do you think fish and shellfish are an important part of the Japanese diet?

2. Growing crops on a hillside is much more difficult than using lowland space that is relatively flat. Why do you think the Japanese use this space even though it is a more complicated farming?

3. Why do you think the Japanese choose to live in crowded conditions rather than build homes on space used for agriculture?

Social Studies Grade 6

6

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Investigate the customs of Asian cultures.
- Analyze the cultural and social aspects of food.

ASSESSMENT CRITERIA

- Distinguish the cultural origins of stir-fry cooking.
- Identify ways that stir-fry cooking promotes health.
- Create a dish using the stir-fry method.

ACTIVITIES & STRATEGIES

Discuss the definition of the word *wok*.
A wok is a round metal bowl made of carbon steel. It is shaped for deep frying.

What culture developed the wok?
The wok was developed by the Chinese and was often used by people who could not buy fuel for cooking. The wok was heated with just a small number of burning twigs at its base.

Define the cooking method designed for the wok.
The foods do not truly fry, but are flashcooked or seared: ***stir-frying*** is the quick cooking and stirring of foods in a tiny amount of oil or fat over high heat.

Stir-frying is a healthy method of cooking because:

- Vegetables stay crisp and keep most of their vitamins.
- Meats are tender and nutritional juices are sealed in.
- Foods are cooked so quickly that they do not have time to soak up unhealthy fat.

The wok can also be used for steaming vegetables, fish, or chicken with little or no loss of vitamins or flavor.

Distribute the handout, "Wok's for Supper" stir-fry recipe to each student. Read the recipe aloud with student participation. Demonstrate the stir-fry recipe and ask the students to guide you in preparing and serving the recipe in class.

Some foods and sometimes the method of preparing certain foods may be lost as people immigrate to a new land due to:

- lack of ingredients
- lack of fuel
- a new climate
- a different lifestyle
- new foods
- reliance on certain types of canned foods

The stir-fry method of cooking continues to be a popular method of preparing food for many cultural groups.

RESOURCES & MATERIALS

Handout: "Wok's for Supper"

"Asian Americans in Texas" found at the beginning of sixth grade *ESR IV* lesson plans

Electric wok
Ingredients listed in the recipe handout, "Wok's for Supper"

TEACHER TIPS

- **This lesson enhances the focus on the Asian cultures to be studied in the 6th grade curriculum.**
- **Invite others to sample the dish such as the cafeteria manager, the principal, or teachers of Asian origin.**

In advance, check with the cafeteria manager about the availability of leftover ingredients for this lesson.

ESSENTIAL ELEMENTS

Social studies. Historical data about Texas, the United States, and the world. The student shall be provided opportunities to identify contributions of various cultures, past, and present, to world civilization.
Social studies. Local, state, national, and world geography. The student shall be provided opportunities to compare cultural regions of the world.
Social studies. Psychological, sociological, and cultural factors affecting human behavior. The student shall be provided opportunities to describe examples of cultural borrowing among societies.

NAME ______________________________ **DATE** ________________

Wok's For Supper

1 lb. diced chicken
3 tbsp. peanut oil
1/2 cup chopped onion
1/2 cup diagonally sliced celery
1 medium carrot,
    cut in paper-thin strips with vegetable peeler
1/2 lb. fresh snow peas or broccoli
1 can of sliced water chestnuts, drained
4 large fresh mushrooms, trimmed and
    thinly sliced through stems
1/2 cup chicken broth
1 tbsp. honey
1/4 cup low sodium soy sauce
1 tbsp. cornstarch, dissolved in 2 tbsp. water
1 (10 oz.) pkg. fresh spinach, washed and steamed
thinly sliced blanched almonds (optional)

Heat 1 tablespoon of the oil in the wok over high heat. Add chicken and brown for 3 or 4 minutes on all sides. Remove and set aside. Pour remaining 2 tablespoons of oil in wok. When sizzling, add onion, celery, carrot, snow peas, water chestnuts, and mushrooms. Stir-fry for 2 minutes. Pour in broth and reduce heat. Cover and steam for 2-3 minutes. Stir occasionally. Stir in honey, soy sauce, and dissolved cornstarch. Return meat to wok. Place spinach on top of meat and vegetables. Cover and steam for 1 minute. Uncover and stir spinach into sauce. Sprinkle with almonds. Serve immediately.

LESSON OBJECTIVES

- Discuss family food preferences.
- Examine food traditions.

ASSESSMENT CRITERIA

Create a menu for an evening meal that incorporates foods preferred by the families of group members.

ACTIVITIES & STRATEGIES

Discuss the following terms:

family
culture
food preferences
food traditions
melting pot
menu

Describe different combinations of people that might be considered *family*; for example, children living with grandparents or other relatives, children living with foster parents, children living with single parents, children living with stepparents, children who consider special groups, friends, or neighbors as family.

Point out that families prefer different foods and celebrate different food traditions. Discuss the factors which affect these food choices, including cultural background, geographical location, family customs, and economic status.

Review the information on the handout, "Appendix C: A Pattern for Daily Food Choices." Point out that people need to eat a variety of foods from each of the food groups in order to stay healthy. Discuss how a typical menu for an evening meal might satisfy all of the food groups.

Divide the students into groups of six. Instruct them to create a *melting pot* menu for an evening meal. Encourage them to:

1. Represent each student's family food preference and food tradition by allowing the individual to select an appropriate food for one of the categories of menu items, i.e., salad, vegetable, main dish, bread, dessert, and beverage.
2. Check the handout to make sure that the menu contains a variety of foods from each of the food groups.
3. Be creative, yet careful to choose foods that look good together and have flavors that complement each other.

Instruct each group to present their menus to the class and discuss reasons for particular choices.

Social Studies Grade 6

6

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Handout: "Appendix C: A Pattern for Daily Food Choices"

Dictionary
Encyclopedia

ESSENTIAL ELEMENT

Social studies. Social studies skills. The student shall be provided opportunities to: compare and contrast opposing viewpoints.

LESSON OBJECTIVES

- Develop an appreciation for foods from different cultural groups.
- Examine the influence of other cultures on our current food habits.

ASSESSMENT CRITERIA

- Report the origins of foods in the American diet which come from various cultures.
- Show geographic locations of food origins on a world map.

ACTIVITIES & STRATEGIES

Distribute copies of the worksheet, "Foods from Around the World," to the students.

Assign or ask students to select one of the foods on the list.

Allow time to research the origin of their food.

Require each student to report his or her findings and point out to the class the country of origin on the world map or globe.

Ask the class if they found any cultures to have a vegetarian diet.

Social Studies Grade 6

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TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Worksheet: "Foods from Around the World"

"Asian Americans in Texas" found in the beginning of sixth grade *ESR IV* lesson plans

Encyclopedias

Encyclopedia of Foods

At least one world map or globe

TEACHER TIPS

- **Make sure hamburger is selected or assigned. Origin of this food may be surprising to students.**
- **Invite a local dietitian to bring his or her books to the class to add to the knowledge.**

ESSENTIAL ELEMENTS

Social studies. Historical data about Texas, the United States, and the world. The student shall be provided opportunities to identify contributions of various cultures, past and present, to world civilization.

Social studies. Psychological, sociological, and cultural factors affecting human behavior. The student shall be provided opportunities to describe examples of cultural borrowing among societies.

NAME ______________________ **DATE** ______________

Foods from Around the World

Below is a list of foods with foreign origins that are commonly found in the American diet. Choose one of them and

- ➥ *look in the dictionary or other resource to find the country from which it originates*
- ➥ *determine the food group in which it belongs*
- ➥ *point out to the class the country of origin of the food on a world map or a globe*

1. **baklava**
2. **chutney**
3. **crepe**
4. **croissant roll**
5. **frankfurter**
6. **gazpacho**
7. **ghee**
8. **goulash**
9. **gumbo**
10. **hamburger**
11. **hollandaise sauce**
12. **hominy**
13. **jambalaya**
14. **Matzoh ball soup**
15. **menudo**
16. **omelette**
17. **poi**
18. **rice pilaf**
19. **sauerkraut**
20. **scones**
21. **shish kebab**
22. **souffle´**
23. **spaghetti**
24. **sushi**
25. **tofu**
26. **torte**
27. **tortellini**
28. **tortilla**
29. **waffle**
30. **wassail**
31. **won ton**
32. **yogurt**

➥ *The food's country of origin is* ______________________.

➥ *The food group in which it belongs is* ______________________.

LESSON OBJECTIVES

- Develop an appreciation for foods from different cultural groups.
- Explore the development of attitudes toward food.

ASSESSMENT CRITERIA

Recognize specific cultural groups through identification of their unique cultural foods.

Social Studies Grade 6

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TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Ask students to research foods that are common to the culture or country that the class is currently studying.

Ask students to find recipes and information about the available staple foods found in that country.

Remind students that location often determines which foods are available. Ask them to state where the ingredients for the recipes are found such as:

- the region where the ingredient was grown
- the markets where produce is traded with other countries

Ask the class for volunteers to copy some of the students' recipes on the chalkboard.

Discuss the food groups that are represented in the recipes using "Appendix C: A Pattern for Daily Food Choices." Emphasize that a balanced diet can be selected in any culture or region. Remind students that a vegetarian diet is a part of many cultures.

Ask the students to explain how these foods compare to their favorite foods.

Review the importance of eating foods from each food group everyday.

RESOURCES & MATERIALS

"Appendix C: A Pattern for Daily Food Choices"

"Asian Americans in Texas" found at the beginning of sixth grade *ESR IV* lesson plans

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

School library

Encyclopedias

Prepared samples of a cultural food

TEACHER TIPS

- **Invite a parent to prepare a dish and bring to the classroom for students to sample.**
- **Provide supplies and prepare a cultural food from one of the recipes found by the students.**

In advance, ask the cafeteria manager to include a menu or an item on the school lunch menu that is representative of the cuisine from the country you are studying.

ESSENTIAL ELEMENT

Social studies. Local, state, national, and world geography. The student shall be provided opportunities to compare cultural regions of the world.

Education for Self-Responsibility IV:

NUTRITION EDUCATION

GRADE 7/8

TEXAS EDUCATION AGENCY

ESR IV

The Six Flags of Texas

Grades Seven and Eight

The history of Texas has been shaped by its native peoples and the successive waves of explorers, pioneers, and immigrants from different cultures from around the world. The six flags that have flown over the state include the French, Spanish, Mexican, Republic of Texas, Confederate, and United States. Each has contributed to the state's rich history, and each has left its mark on the economic, social, political, and cultural character of the state.

FRENCH TEXAS
1684 - 1687

The French reign over Texas was brief. French explorers led by Robert de La Salle planned to establish a French colony near the mouth of the Mississippi River; however, on the voyage toward the Mississippi, one ship was captured by the Spanish and three other ships became lost and landed near present day Matagorda Bay between the Guadalupe and Colorado Rivers. About two hundred French settlers built a fort, Fort St. Louis, near today's Victoria county and continued their search for the Mississippi River, but their efforts were unsuccessful; La Salle was soon killed by disgruntled colonists.

Fort St. Louis did not survive; however, it did give France some claim to Texas, particularly Louisiana which the French claimed included land as far south as the Rio Grande into Texas. The U.S. government and the Mexican government disputed the territorial boundaries of the Louisiana Purchase from 1803 to 1819. A treaty between Mexico and the United States fixed the boundaries of the Louisiana territory at the Sabine and Red rivers.

The Republic of Texas encouraged people from Europe to settle in Texas, and soon French immigrants migrated from the former French territory sold to the United States in the Louisiana purchase, while others came directly from France. In 1842, Henry Castro received two land grants and brought about two thousand immigrants to establish the towns of Castroville and D'Hanis located east of San Antonio.

In the mid 1800s, land near Dallas was purchased for a colony of well-educated and highly skilled French immigrants. The colony broke up after two years with many of its residents moving to the Dallas area.

In the mid 1870s, many French Texans became involved in the Franco-Texas Land Company which purchased land surrounding the railroads. Many of the French investors established farms and ranches on this land which soon became known as Mineral Wells and Baird.

The old French culture remains intact among the descendents of the early French immigrants living in and around Castroville. The French culture and influence has also been enhanced by Cajuns who live in the Beaumont-Port Arthur area and in East Texas. ***Cajuns*** are descended from natives of Louisiana who are direct descendents of the Acadian French immigrants. In the mid 1700s, Acadian French settlers immigrated to Louisiana from Acadia, a former French colony that now includes Nova Scotia, New Brunswick, Prince Edward Island, and parts of Quebec and Maine. They speak a unique form of the French language called Cajun French, which for many years was not written down, but passed verbally from generation to generation. When new words were needed for things such as electricity and cars, the Cajun French adapted words from the English, Indian, and Spanish languages, thus adding to the uniqueness of their own language.

Port Arthur hosts an annual ***Crawfish Festival*** in July that emphasizes the more recent French immigration trend of the Louisiana Cajuns who immigrated to Texas during both World Wars to work in defense-related industries. Thousands of people visit the festival to sample Cajun and Creole dishes which are adaptations of French recipes applied to native foods such as gumbo, red beans and rice, and jambalaya. ***Creole dishes*** are unique blends of French and Spanish cookery which include chicken, seafood, spices, and vegetables (especially okra) in a soupy mixture served over rice. French Texans' celebrations have helped to maintain the traditions brought to Texas by the early immigrants. ***L'Alliance Francaise*** is a club found in many college towns and large cities that sponsors activities to perpetuate the French language and customs. The club hosts the annual ***Bastille Day*** ball held on July 14 which is the French equivalent of the U.S. Fourth of July.

SPANISH TEXAS
1519 - 1821

The Spanish were the first Europeans to come to Texas. This was a natural avenue of expansion because the Spanish had already con-

quered Mexico. Of all the countries that explored the land now called Texas, the Spanish had the most lasting impact. To the Native Indians, the Spanish were men from another time bringing tools, guns, gunpowder, metal armor, and an unimaginable way of life. The Spanish brought new and strange creatures, including horses, cattle, donkeys, chickens, goats, and swine. They introduced new building techniques, the wheel, the use of money, writing, printing, and new concepts of laws and government. The Spanish brought a new language to Texas, which is still spoken, especially in the southern region of the state. Newspapers written in Spanish and Spanish radio and television stations can be found all across Texas, and many Texans are bilingual, speaking both English and Spanish.

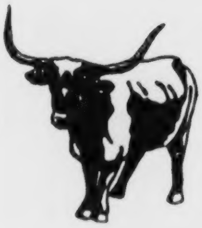
Just as the Spanish government required all Spanish citizens to be Catholic, they required the same of all citizens of New Spain or Mexico. Today, many descendants of the citizens of New Spain are Catholic. Spanish friars and priests from Mexico came to Texas with the intent of teaching the Native Americans about Christ and the Spanish way of life. The Spanish felt that it was their duty to spread the knowledge of their civilization and religion throughout the underdeveloped lands, even if it meant using force. The Spanish government built missions which served as church institutions and were usually at the center of towns and settlements. These missions consisted of a chapel and other buildings with two or more priests or Franciscans (followers of the religious order of Saint Francis of Assisi). The Alamo, originally the San Antonio de Valero Mission, was established as part of the Spanish attempt to settle Texas. As Spain began to lose control of its claimed territory, the missions were used by the military to forestall the advances of other nations into Spanish lands. Many towns retained their Spanish names or were named after Spanish missions located near cities, such as Nacogdoches (Nuestra Senora de Guadalupe do los Nacogdoches) and San Jose (San Jose Mission).

Spanish architecture, known also as mission style architecture, is still widely used in Texas. The original architecture was a combination of Native American adobe construction and roofs covered with Spanish tiles in shades of red. Mission structures were built around a common courtyard and included arched windows and doors, wrought iron exterior decor, and a type of plaster applied to the exterior walls of a house, called stucco.

While the Spanish were exploring western Texas, the French activity near the coast prompted the Spanish to increase their exploration efforts into East Texas. Alonso de Leon led the Spanish on a quest (adventure) to find the remains of Fort St. Louis, then they traveled farther north and east, and finally made contact with the Caddoe

Indians in East Texas. Like other Native American tribes, the Caddoes had several different bands, one of which called each other *Taychas* meaning friend. The Spanish later referred to the Caddoes as Taychas, pronouncing it as *Tejas*, and the word was later adapted to its English version of Texas.

The first Spanish settlement in Texas was inadvertently established near El Paso as the Spanish fled an Indian attack in New Mexico. They settled along the Rio Grande and named their town Ysleta.



By the early 1700s, the Spanish had settled very little of Texas, but in 1719, the Spanish sent a new governor to Texas, Marques de Aguayo, who requested that Spain send families to settle near the mission of San Antonio de Valero and the presideo at San Antonio de Bexar. Their arrival marked the real beginning of the first town in Texas—San Antonio. Another settlement was established in East Texas between the Trinity and Neches rivers and included a presidio and four missions. One of the missions, Nuestra Senora de Guadalupe de los Nacogdoches, is situated near present-day Nacogdoches. During the same year, Aguayo sent many soldiers, horses, cattle (longhorns), and sheep into east Texas to protect the eastern borders from the French.

During the time of Spanish rule, pioneers from the United States were allowed to settle in the area now known as Texas. The heaviest influx of colonists began to arrive in the early 1800s when the Spanish government issued ***land grants***, pieces of land given to individuals by the government, to entice people to settle in Texas. ***Empresarios*** were people who got land grants and brought in large groups of people to form colonies or settlements in a particular area of Texas. One of the most famous empresarios during Spanish rule was Moses Austin. He had negotiated a land grant with the Spanish government but died before he was able to carry out his plans. His son, Stephen F. Austin, took over his efforts, but during his negotiations, Mexico won its independence from Spain and he had to renegotiate his plans with the new Mexican government.

Spain ruled the area that is present day Texas for three centuries before losing control to their own descendants. Mexico, including Mexican Texas, became an independent country in 1821.

MEXICAN TEXAS
1821 - 1836

After Mexico became an independent country in 1821, the Mexicans immediately rushed into Texas to take control from Spain. In 1824, the

Mexican government approved a constitution which included regulations for the continuation of immigration to Texas. U.S. immigrants typically settled in the eastern portion of the state, but the native Mexicans moved northward from Mexico and established ranch sites or rancherias, along both sides of the San Antonio River. In the area of present day Nacogdoches, approximately fifty rancherias existed which provided the foundation for future Texas towns such as Goliad, Nacogdoches, and Victoria.

The immigration was allowed for the next ten years only to be repealed by Mexican President Antonio Lopez de Santa Anna when he consolidated his powers as dictator. Many people from Mexico and Europe were still allowed into Texas, but people from the United States were forbidden. Finally, on March 2, 1836, Texas declared its independence from Mexico. There were many Mexican Texans who fought with the Texans to win independence, and it is estimated that one third of the Texas soldiers that fought against the troops of Santa Anna were Mexican Texans. Texas defeated Santa Anna's troops and became an independent republic in June of 1836. Today, approximately three million Texans are of Mexican birth or descent. These numbers represent the state's strong ties with its past and emphasize their importance to the state's future.

Many Mexican Texans participate in the traditional Mexican entertainment forms of dance, sporting activities, and fiestas or festivals, which are held in observance of special days. Religious holy days include: December 12, commemoration of the date of the apparition of the Virgin de Guadalupe to the Indian Juan Diego in Mexico City in 1521; November 2, All Souls' Day; and December 25, Christmas Day.

Mexican historical holidays include: September 16, el Diez y Seis de Septiembre, which commemorates Mexican independence from Spain; May 5, Cinco de Mayo which commemorates the victory at the Battle of Puebla in 1862, when French forces were defeated by Mexican forces after invading La Puebla (the struggle with the French lasted five more years but the May 5 victory gave the Mexicans a strong sense of unity and a reason to fight to save their independence.)

Brownsville holds an annual four-day fiesta called ***Charro Days***, which celebrates the role of Mexican cowhands, charros, or vaqueros, in Texas history. Participants dress in traditional Mexican clothes, dance, sing, eat, and put on shows.

THE REPUBLIC OF TEXAS
1836 - 1845

Texas declared its independence from Mexico on March 2, 1836, and on April 21, 1836, after the massacres of Texans by Santa Anna's armies at the Alamo and Goliad, Texas won its independence and became a self-governing country. Although Texas lasted only ten years as a republic, it was recognized as such by many countries including England, France, Germany, and the United States.

The Republic of Texas did not have the funds to pay for an army to protect itself against Mexico or the Indians, but it did establish a group of mounted police, the ***Texas Rangers***, to help protect the settlers. The Rangers remained a strong law enforcement agency in Texas until the mid 1930s when they were reorganized and combined with the Highway Department to form the Department of Public Safety (DPS).

The Republic was anxious for people to settle in Texas because farms, homes, and businesses, would strengthen the Republic, reduce the number of Indian attacks, and help keep Texas from being taken over by Mexico. Land grants were sold to immigrants from the United States, and various Europeans who came to Texas to avoid economic distress at home and to take advantage of what seemed to be unlimited opportunities in the new Republic. These new settlers included Polish, French, Scottish, German, Swiss, Czech, Scandinavian, Canadian, English, and Irish people, and they brought with them their own cultures and traditions.

The population of Texas grew from 35,000 in 1836 to more than 140,000 in 1845 which included United States and European settlers, Mexican Texans, and slaves; however, Native Americans were not included in the population figures. Two brothers from New York, A.C. and John Allen, developed a town in southeast Texas which later was called Houston, in honor of Sam Houston. John Neely Bryan, a man from Tennessee, settled in the Peters Colony on the Trinity River in 1841 which was later developed into the town of Dallas.

Mexican Texans proportionately became small in number, but continued to live in the regions of San Antonio, Goliad, and the ranches along the Rio Grande. The Germans were growing in numbers in the communities of Fredericksburg and New Braunfels. In 1842, French immigrants, lead by Henry Castro, founded Castroville and D'Hanis in South Texas, a Norwegian colony settled near present day Dallas, and

Irish Catholics began arriving in Mexican Texas in the 1820s.
The new Republic passed many laws during its ten year period. The first Homestead Law prevented land from being taken away as payment for any other kind of debt which helped many farm families keep their land. Another new Texas law gave women the right to own property, and adopted children were given the same rights as biological children of a family. In 1839, a law established public schools in Texas, and each county received land that could be sold to pay for school expenses. These laws were adapted from Spanish laws and once admitted to the United States, other states followed Texas and passed similar laws.

The basic food product of the early citizens of the Republic of Texas was corn, which was used in a variety of ways. The primary crop was cotton, and despite difficulties of weather and insects, cotton became the leading export crop by 1845. Farmers still needed to supplement their incomes by raising chickens, pigs, beef cattle, and milk cows. Stores had little to sell, so settlers often bought or traded goods with other settlers including such items as food, work, and things made at home. This trading practice helped introduce and mix the many cultural traditions and cooking heritages of the settlers.

Despite the cultural diversity of the state and the ethnic and cultural regionalism, a sense of uniqueness developed among the citizens of the Republic of Texas. Texas Independence Day and San Jacinto Day were celebrated with cannon fire, parades, speeches, banquets, barbecues, and dances, and by the 1840s, the Alamo became a symbol of Texas and its struggle for liberty. Although many Texas citizens retained ties to their native lands, they had a special allegiance to Texas. The ten year period of the Republic united the many different cultures into a type of Texas nationalism that is still evident today.

TEXAS UNDER THE UNITED STATES
1845 - 1861

The goal of many Texans was to become a state, but other U.S. citizens did not want to annex Texas because Texas allowed slavery. Mexico was also against Texas' annexation because Mexicans still had hopes of recapturing the area and promised war if the annexation occurred. Texans felt that annexation would help solve the state's financial difficulties as well as provide protection from Indians and Mexico. After two attempts, the U.S. Congress annexed Texas, and the state drafted its new constitution (similar to the constitution of the

Republic). It was approved by U.S. President James K. Polk, and Texas became the twenty-eighth state of the United States. The Republic's flag became the state flag of Texas.

The Mexican government claimed the land to the Nueces River as Mexican territory. The United States claimed the land to the Rio Grande, south of the Mexican government's claim. The land between the Neuces and the Rio Grande became known as the disputed area, which lead to the Mexican War that ended with a peace treaty acceptance of the Rio Grande boundary. Texas also claimed parts of present day New Mexico, Oklahoma, Wyoming, Colorado, and Kansas. In order to pay debts incurred by the Republic, Texas agreed to sell the land in 1880 to the U.S. government, and the new boundaries remain the same today.

Once Texas became a state and boundary disputes were settled, more people came to Texas. Nine out of ten new settlers came from other states. People from the lower Southern states, such as South Carolina and Louisiana, settled primarily in East Texas and grew cotton, sugar, and rice. People from the upper Southern states including Kentucky, Arkansas, North Carolina, and Virginia, settled primarily in North Texas and relied on corn and wheat crops. Settlers also came from the Midwest and New England, but the majority of the new U.S settlers came from Arkansas, Alabama, and Tennessee. European immigration continued from France, Germany, Czechoslovakia, and Poland. The largest European group was the Germans, numbering more than twenty thousand in 1860.

Some Mexican Texans left Texas during the Mexican War or soon after. They often were faced with ridicule and discrimination. Those that remained (approximately 120,000) settled primarily in San Antonio and Goliad, or near the Rio Grande.

A variety of religions could be found in Texas at the time of annexation; Methodists, Baptists, Presbyterians, Catholics, and Episcopalians, were the leading religious groups. Churches were beneficial to the Texas society because they improved education by establishing Sunday Schools, academies, colleges, and universities. Schools that were founded during this period of Texas history include Baylor (Baptist), established in 1845 in Waco, St. Mary's University (Catholic) in San Antonio, and Austin College (Presbyterian) now located in Sherman.

As settlers moved further west into Texas, they faced difficulties with the Comanches. U.S. soldiers tried to protect Texas settlers from the Indians by building forts, such as Fort Bliss, Fort Stockton, Fort Ringold, Fort Phantom Hill, and Fort Worth. The Texas Rangers assisted U.S. soldiers, but as problems between the North and South grew more intense, the U.S. soldiers focused less attention on the Indians.

As a result, the Texas government decided to set land aside for an Indian reservation, which appealed to some of the Comanches, but the reservations were eventually closed and the Indian residents were transferred to the Indian Territory in Oklahoma.

TEXAS UNDER THE CONFEDERACY
1861 - 1865

By 1850, differences between the North and South were causing great conflicts. One conflict dealt with the slavery issue, which was opposed by the North and favored by the South. Another conflict dealt with the economy and how the U.S. government should help different areas of the nation. Although the North relied on its manufacturing plants, and the South relied on agriculture, the North and South often disagreed on the types of laws needed to help the economies of the different areas.

The South did not support the election of Abraham Lincoln as U.S. president in 1860, and soon Texas and ten other states seceded, or withdrew, from the United States and formed the Confederate States of America, also known as the Confederacy. When the Civil War began in 1861, approximately sixty-five thousand Texans fought in the confederate army. General John Bell Hood (*Hood's Texas Brigade*) and Benjamin Franklin Terry (*Terry's Texas Rangers*) both became famous for their efforts in battles outside of Texas. During the war, Texas plantations grew cotton used for cloth to make Confederate uniforms; however, the plantations produced less cotton as slaves and other male plantation workers joined the Confederate Army. In 1862, Union forces temporarily occupied Galveston, the main port in Texas, until the Confederacy recaptured it. The last battle of the Civil War took place in Texas at Palmito Ranch near Brownsville. April 9, 1865, marked the end of the Civil War.

The Emancipation Proclamation was issued on January 1, 1863 by President Lincoln; the proclamation stated that all slaves in territories still at war with the Union were to be freed, but this news did not reach the state until June 19, 1865, when General Gordon Granger landed in Galveston and read the Emancipation Proclamation. Even though the Emancipation Proclamation did not officially end slavery, it led to the Thirteenth Amendment of the Constitution, passed on December 18, 1865, which legally ended slavery in the United States.

African American Texans celebrate ***Juneteenth*** on June 19 with parades, music, dancing, speeches, and picnics.

The Texas economy was in ruins after the war. Texans who had supported the Confederacy were not allowed to vote or serve in government offices, and before Texas could be re-admitted to the United States, they had to accept the Thirteenth, Fourteenth, and Fifteenth amendments to the U.S. Constitution, which freed blacks, made them citizens of the United States, and allowed them to vote. Texas had to rewrite the state constitution accordingly, and on March 30, 1870, Texas was re-admitted to the Union.

TEXAS UNDER THE UNITED STATES AFTER THE CIVIL WAR

After the Civil War, Texas began a period of rebuilding the state, called Reconstruction. Plantations were divided into smaller farms which were rented to people who had no farmland of their own. These individuals were known as ***tenant farmers***. ***Sharecroppers*** were tenant farmers who did not pay rent for the land they used, but they shared a portion of their crops with the landowners.

The undeveloped land in West Texas was an incentive to farmers from other states, and many new farmers came to Texas from other parts of the South. In addition foreign immigrants continued to move to Texas to farm. An estimated five million longhorns roamed Texas at the end of the Civil War. These cattle were in great demand in the North because people wanted to restore their war-depleated herds. The herds in Texas could be purchased for three or four dollars a head, and they were sold for thirty or forty dollars a head to buyers in the North. Within a year after the end of the Civil War, the Texas cattle industry was thriving.

During the Civil War, Texas food crops and livestock were scarce and simple; wild game, wild berries, soups, peas, beans, puddings, breads, and griddle cakes were the mainstay. As a result of Reconstruction, food became more abundant and varied. More time and land was available to grow vegetable gardens and fruit trees. Wild game was still common at the dinner table, and beef became readily available. Farming and ranching became a significant part of the state's economy.

Fine Arts **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Explain the physiological, psychological, and social implications of food.

ASSESSMENT CRITERIA

Contrast the physiological and psychological outcome of a nutritious diet with a nutritionally poor diet.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:
- In order to maintain good health and feel energetic, we must eat a variety of nutritious foods and limit the consumption of sugar, fat, and salt.
- How we feel and what our bodies can do is dependent on our eating pattern and on the food we eat. For example, if we skip a meal or eat the wrong foods, we may run out of energy, become sluggish, grouchy, light headed, sleepy, or our stomachs may hurt. Long term problems are sometimes difficult to notice, but they are more serious and take longer to correct. If these problems occur during childhood and adolescence, they may be impossible to correct.

Instruct the students to create two abstract paintings; one that represents how they might feel if they had eaten a nutritious diet, and another painting that represents how they might feel if they ate a nutritionally poor diet. Since this is an abstract painting, remind them to give attention to form, color, and value.

After students have completed their paintings, ask each student to show and describe their painting to the class.

Display the paintings in the classroom or the cafeteria.

RESOURCES & MATERIALS

Paint
Paper
Brushes

Teacher Tip

Allow two class periods for completion of this activity, if necessary.

In advance, check with the cafeteria manager for help in displaying artwork in the cafeteria.

ESSENTIAL ELEMENTS

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to work with design, drawing, painting, printmaking, sculpture, and crafts.
Fine arts. Art. Aesthetic growth through visual discrimination and judgment. The student shall be provided opportunities to evaluate artwork of students and major artists.

Fine Arts **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify nutrients, their sources, and their functions.

ASSESSMENT CRITERIA

Design and present a commercial promoting the benefits of a nutrient.

ACTIVITIES & STRATEGIES

Discuss the following information about nutrients with the students:

- *Nutrients* are life-sustaining substances that nourish and promote the growth of the human body.
  - The six classes of nutrients are: water, protein, fats, carbohydrates, vitamins, and minerals.
  - Nutrients provide the energy the body needs to function.
  - Nutrients satisfy the body's needs for tissue repair and new tissue development.
  - Nutrients help regulate body functions.
  - No single food provides the nutrients for every body need.

Allow students to work in pairs or small groups. Tell each group to draw a card that has the name of a nutrient on it.

Inform the students to be prepared to sell their nutrient to the class by creating a one-minute commercial. The students may use a variety of sources for information including encyclopedias, dictionaries, and the "Instructor's Resource Guide for Teaching Nutrition Education" found at the beginning of this book. They are to list at least two functions and three sources of their nutrient. Encourage them to create a unique and different commercial.

Provide the opportunity for each group to present their commercial to the class. The commercials could be given as Public Service Announcements over the school's P.A. system.

Instruct students to record information on the worksheet, "Nutrients," as they observe the commercials presented by all of the groups.

If any of the nutrients on the worksheet were not researched, then ask students to make some guesses about nutritional information to insert in the remaining spaces. Use the "Instructor's Resource Guide for Teaching Nutrition Education" to find the nutrient information for the worksheet.

RESOURCES & MATERIALS

Worksheet: "Nutrients"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Encyclopedias, dictionaries

3x5 cards with the name of one nutrient on each card. Names of nutrients:

Carbohydrates
Protein
Water
Fat
Vitamin A
Vitamin D
Vitamin E
Vitamin K
Thiamin
Riboflavin
Niacin
Ascorbic Acid
Calcium
Sodium
Iron
Iodine
Magnesium

ESSENTIAL ELEMENT

Fine arts. Theatre arts. Acting concepts and skills. The student shall be provided opportunities to utilize improvisation and explore creative dramatization.

NAME ______________________________ DATE ______________

Nutrients

Instructions:
Write the information in the space provided next to each nutrient.
Be sure to list at least two functions and three sources for each nutrient.

Nutrients	*Functions*	*Food Sources*
Carbohydrates		
Protein		
Water		
Fat		
Vitamin A (Retinol)		
Vitamin D (Calciferol)		
Vitamin E (Alpha Tocopherol)		
Vitamin K (Phylloquinone)		
Thiamin		
Riboflavin		
Niacin		
Ascorbic Acid		
Calcium		
Sodium		
Iron		
Iodine		
Magnesium		

Fine Arts **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Describe the relationship between nutrition and the prevention and treatment of health problems (cancer, common cold, diabetes, heart disease, PKU).

ASSESSMENT CRITERIA

Recognize the relationship between nutrition and the common cold.

ACTIVITIES & STRATEGIES

Introduce the lesson to the students with the following information:

> For many years, it has been rumored that consuming large doses of vitamin C (ascorbic acid) will prevent or cure the common cold. Scientific research indicates that large doses of vitamin C have no effects on the virus that causes colds.

Present these facts about vitamin C on the chalkboard, poster board, or a transparency.
- Vitamin C is water-soluble.
- Large amounts of vitamin C above the body's daily need are excreted through the urine.
- The body benefits from vitamin C by drinking or eating several single servings of vitamin C foods throughout the day.
- The Recommended Dietary Allowance for vitamin C is 60 milligrams.
- The person whose diet meets the minimum daily requirement of nutrients will probably not suffer from severe colds, and may recover sooner.
- One cup of orange juice contains 124 milligrams of vitamin C; therefore, one-half cup of orange juice would supply the daily recommended 60 milligrams.
- Vitamin C can double or triple the absorption of iron when vitamin C foods are consumed at the same time as foods that contain iron.

Ask students about other factors involved in contracting a cold or other viruses such as:
- personal immune system
- personal contact with a virus
- washing hands, covering mouth and nose when coughing or sneezing
- nutritionally balanced diet, exercise, and sleep

Divide the class into small groups and tell each group to draw a poster-size cartoon about the prevention of the common cold and vitamin C. After completion, ask the students in each group to show and describe their cartoon to the class.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Advanced Food Science and Nutrition. Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas 79409-1161

Poster board
Markers

TEACHER TIPS

- **The most nutrient-dense sources of vitamin C are green peppers, cauliflower, broccoli, cabbage, strawberries, papayas, and romaine lettuce.**
- **Orange juice is a great fluid replacement for athletes after a workout because of the potassium level. It is much better than some products advertised for athletes.**

ESSENTIAL ELEMENT

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to work with design, drawing, painting, printmaking, sculpture, and crafts.

Fine Arts **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Discuss family food preferences.
- Examine food traditions.

ASSESSMENT CRITERIA

Design an artwork that represents traditions and preferences of family food choices.

ACTIVITIES & STRATEGIES

Instruct the students to give an alternative description of a family other than the traditional family made up of a mother, father, and children. Ideas may range from foster families, to children living with relatives other than parents, to children identifying with a community group, or a family next door.

Point out that *family* means different things to different people, and that people do not have to be related by blood to be considered family.

Discuss the students' concepts of *culture*. Cite examples of how culture might impact food preferences and food traditions.

Instruct students to create an artwork that is descriptive of a special meal, food, or holiday feast that is important to their families. Students should include images of foods that made this time special to them. Encourage them to pay attention to the art elements of color, form, and value as they reflect the mood of this event.

After students complete their artworks, ask each student to show and describe their artwork to the class.

RESOURCES & MATERIALS

A variety of art materials

TEACHER TIPS

- **Allow each student to decide if artwork will be two- or three-dimensional and the type of medium to be used.**
- **Allow two class periods for completion of their artwork, if necessary.**

In advance, ask the cafeteria manager for permission to display artwork in the cafeteria.

ESSENTIAL ELEMENT

Fine arts. Art. Awareness and sensitivity to natural and man-made environments. The student shall be provided opportunities to explore elements (line, value, texture, color, form, and space.)

Fine Arts **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Analyze nutrition information on food labels.

ASSESSMENT CRITERIA

Create a food label using the regulations set by the Food and Drug Administration.

ACTIVITIES & STRATEGIES

Discuss food labels with the students.

- Food labels provide helpful information that aids in making wise buying choices.
- The Food and Drug Administration (FDA) is an agency of the U. S. Department of Health and Human Services. The main function of the FDA is to ensure that the United States' food supply is safe and wholesome. It regulates what must be included on labels.
- Specific guidelines for information required on labels include the following:
  - ° Labels must be in English.
  - ° Labels must list the name and address of distributor, manufacturer, or packer.
  - ° Net weight of contents must be listed.
- Labels must list:
  - ° the common name of the food
  - ° each ingredient in order of predominance in the product
  - ° artificial flavorings and colorings for all foods, except butter, cheese, and ice cream
  - ° all chemical preservatives
  - ° vitamin and mineral content on foods for special dietary needs

Distribute food labels to each student. Ask them to identify information required by law, and any additional information that the manufacturer may have included. Ask the class to list some reasons why manufacturers may include information not required by law. Ask them to find the most predominant ingredient.

Instruct the students to create their own food labels for a product that includes all of the Food and Drug Administration's requirements, and any additional information that they think will help sell their product. Remind them that food labels are a form of advertising.

Allow time for each student to present his or her label to the class, then display the labels in the classroom.

RESOURCES & MATERIALS

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Food labels
Art materials

TEACHER TIPS

- **Labels may state the truth but still give a false impression. Example:**
  - **°Shortening is labeled as having no cholesterol. While this is true, shortening is very high in saturated fat which is just as harmful.**
  - **°"Fresh" orange juice that has been frozen.**
- **Allow two class periods for completion of the activity, if necessary.**

ESSENTIAL ELEMENT

Fine arts. Art. Inventive and imaginative expression through art materials and tools. The student shall be provided opportunities to work with design, drawing, painting, printmaking, sculpture, and crafts.

Fine Arts **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Describe various eating disorders and their symptoms.

ASSESSMENT CRITERIA

- Define anorexia nervosa.
- Describe characteristics of anorexia nervosa.

ACTIVITIES & STRATEGIES

Write the definition of ***anorexia nervosa*** on the chalkboard: *an eating disorder involving a psychological loss of appetite and self-starvation, resulting in part from a distorted body image and various social pressures associated with puberty.*

Review the following characteristics of this condition:
- rigid dieting/dramatic weight loss
- distorted perception of body; feelings of being too fat
- excessive exercise and eating rituals
- security found in rigid control and order of lifestyle
- intense fear of, and panic after gaining weight
- feelings of power and purity through self-denial
- preoccupation with food and watching others eat
- absence of menstrual cycles

Ask the students to describe the difference between appetite and hunger. Appetite is a desire, fondness, or stimulation for food or drink. Hunger is a sensation or state of weakness caused from the body's need for food. Most of us rarely experience true hunger. The anorexic person lives in a constant state of hunger.

Divide the class into research groups of three or four students, and assign to each group a segment of the Karen Carpenter story, as listed below.
- Play her most popular songs (students could bring albums from parents' collections).
- Describe her eating disorder and how her career contributed to the disease including the rigid control of lifestyle; rituals involving performance; and preoccupation with thinness for stage appearance.
- Who or what caused Karen to obtain help for her disease?
- What caused her death and at what age?
- What were some highlights of Karen's career (e.g., her brother's influence)?

Instruct each group to report their findings to the class.

RESOURCES & MATERIALS

Kessa by Steven Levenkron. New York: Warner Books, 1978

The Best Little Girl in the World by Steven Levenkron. New York: Warner Books, 1986

TEACHER TIPS

- **Appendix H lists important 800 numbers and addresses of agencies. Please display the following and require students to copy it:**

  Bulimia, Anorexia Self-Help
  6125 Clayton Ave., Suite 215
  St. Louis, Missouri 63139
  1-(800) 227-4785

  This organization provides support and help for recovery from eating disorders.
- **Ask the counselor to visit the class to respond to questions.**

ESSENTIAL ELEMENT

Fine arts. General music. Music history and literature. The student shall be provided opportunities to hear and discuss works from all major musical periods, including the music of contemporary life; and learn about the lives and works of selected composers.

LESSON OBJECTIVE

List the functions of dietary fiber in the body.

ASSESSMENT CRITERIA

Discuss the long-term effects of inadequate fiber intake on health.

ACTIVITIES & STRATEGIES

Ask students to name some foods that are high in *fiber* .

Discuss the functions of fiber and how the amount of fiber in the diet can be increased.

- Fiber keeps contents of the intestines moving and prevents constipation.
- It helps reduce the risk of colon cancer by allowing food to pass quickly through the digestive tract. This limits susceptibility to agents in foods that might cause cancer.
- Fiber stimulates muscles of the digestive track. Well-toned digestive track muscles aid in prevention of diverticulosis and hemorrhoids.
- Fiber absorbs water and gives a feeling of fullness. This helps people feel full longer and thus contributes to healthy eating and weight control.
- Foods high in fiber include whole wheat bread, brown rice, apples, bananas, oranges, broccoli, corn, pinto beans, almonds, and pecans.

Refer to the information regarding functions of dietary fiber from the "Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV.*

Display the transparency, "Fiber Fitness." Read through the fiber-full menus with the class. Discuss each day's menu and the similarities to the students' diets. Are their days fiber-full or fiberless?

Distribute the school lunch menus to the class. Instruct students to review the lunch menu for one week or month and circle the fiber-rich foods. After completion, ask students to name the fiber-rich foods as you list them on the chalkboard.

Adapted from:
"Changing the Course: Secondary Curriculum," American Cancer Society, pp. 103, 104, 111

RESOURCES & MATERIALS

Transparency: "Fiber Fitness"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

School lunch menus

Obtain lunch menus for one week or month from the food service department.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize that daily health practices affect confidence and achievement, social development and wellness.

NAME ______________________________ **DATE** ____________________

Fiber Fitness

Fiber-full Day

Breakfast

- *Orange*
- *Shredded wheat or raisin bran*
- *Corn muffin*
- *Milk*

Lunch

- *Tuna sandwich with lettuce and tomato on whole wheat bread*
- *Minestrone soup*
- *Apple*
- *Milk*

Dinner

- *Broiled chicken*
- *Broccoli and scallions*
- *Garden salad*
- *Banana*
- *Whole wheat roll*
- *Milk*

Fiber-less Day

Breakfast

- *Doughnut*
- *Milk*
- *Orange juice*

Lunch

- *Cheeseburger*
- *French fries*
- *Shake*

Dinner

- *Broiled chicken*
- *Mashed potatoes*
- *Ice cream*
- *White bread*
- *Milk*

LESSON OBJECTIVES

- Recognize the effects of food on health and appearance.
- Analyze personal food habits.

ASSESSMENT CRITERIA

Identify the importance of eating breakfast.

Health **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Discuss the students' types of eating patterns by asking which of the following would describe their families' eating habits:
- the traditional three meals of breakfast, lunch, and dinner
- skip breakfast, lunch, or dinner
- six or seven small meals
- two liquid diet drinks and dinner
- soft drink, soft drink and chips, and dinner

Ask students to list any other eating habits that were not given.

Instruct students to consider eating a school breakfast as an alternative to skipping this meal.

Ask students to give their reasons for not eating breakfast. Some reasons might include:
- not enough time to eat
- dislike foods frequently served at breakfast
- want to lose weight
- not hungry
- no one to prepare breakfast

Distribute and review the worksheet, "Breakfast Survey," with the students. Display a transparency of "Appendix C: A Pattern for Daily Food Choices," so the students can use it as a resource to complete the worksheet.

Divide the class into small groups. Display and review the transparency of "The School Breakfast Pattern." Tell each group to plan a breakfast menu using exciting, creative breakfast foods which meet the School Breakfast Pattern. Then tell each group to share their menu with the class and let the class vote on the winning menu.

RESOURCES & MATERIALS

Worksheet: "Breakfast Survey"

Transparency: "Appendix C: A Pattern for Daily Food Choices"

Transparency: "The School Breakfast Pattern" (supplement to Appendix C)

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

TEACHER TIP

Tell the class that their breakfast menu can include traditional or nontraditional foods.

- **In advance, ask the cafeteria manager to explain the National School Breakfast Pattern.**
- **In advance, ask the cafeteria manager about the possibility of including the winning breakfast menu or dish on the menu one morning.**

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to plan a personal program of physical activity, rest, and food selection.

NAME ______________________________ **DATE** ________________

Breakfast Survey

1. Below is a time line representing the 24-hour period beginning with yesterday morning and ending with this morning. Turn the paper sideways and write on the approximate timeline the foods that you ate during the past 24 hours.

5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 12 3 4 5 6

Morning Mid-Morning Noon Afternoon Evening Midnight Early Morning

2. List the foods you had for breakfast last Saturday and Sunday.

3. How did the Saturday and Sunday breakfasts differ from the weekday breakfasts? Explain the difference.

4. Did your breakfast menu include all of the food groups, or at least three of the five? The suggested daily servings for the Meat, Poultry, Fish and Alternatives is two to three servings. These servings are usually provided in the lunch and dinner meals. What foods from this group did you eat?

5. Can you and your family improve your breakfast habits to include the necessary food groups? List several ways you could do this.

LESSON OBJECTIVES

- Compare the nutritive value of foods.
- Evaluate dietary needs of women during pregnancy and lactation.

ASSESSMENT CRITERIA

- Discuss the need for increased calcium in the diet of pregnant and lactating women or teens.
- Identify the best food sources of calcium.

ACTIVITIES & STRATEGIES

Pregnant women and nursing mothers require increased amounts of calcium because:
- They are sharing their calcium with their babies.
- If the calcium does not come from their food supply, the body will take it from the mother's bones and teeth.
- Calcium in bones and teeth is constantly being replaced.

Write the following calcium facts on the board:
- Milk and other dairy products such as yogurt and cheese are rich sources of calcium.
- In America, the addition of vitamin D to milk helps the body absorb calcium.
- Each of the foods provide the same amount of calcium as one cup of milk:
  - one and one-half cup broccoli
  - one cup almonds
  - one to one and a half cups of collard, turnip, or mustard greens
  - one and three quarters cups of sunflower seeds
  - two to two and one-half tablespoons of blackstrap molasses
  - three cups cooked pinto beans
  - three pieces enriched corn bread
- Calcium is cooked out of meat bones that are boiled in soups.

Divide the class into small groups of three or four students. Tell each group to plan a week's menu for a pregnant or lactating young adult or teen. Use the guides in the opposite column.

Allow each group to share ideas with the class.
- Tell them to consider personal attributes and attitudes which affect personal health choices.
- Challenge students to discriminate between responsible and irresponsible health practices which affect wellness.

RESOURCES & MATERIALS

Daily Food Guide for the Expectant Mother

Food	Number of servings
Vegetables such as spinach broccoli squash potatoes	1 or 2
Fruits such as oranges grapefruits bananas apples grapes	1 or 2
Breads, Cereals, Rice, and Pasta such as whole-grain, enriched breads, cereals, rice, or pasta	4
Milk, Yogurt, and Cheese such as low-fat milk, cheese, yogurt	4
Meat, Poultry, Fish, Dry beans and Peas, Eggs and Seeds	2

The pregnant teenage girl should increase calories by only a few percent. However, since she is still growing and developing, she should increase each of the above food groups by one serving.

The lactating mother should have the same as the above except to increase milk and milk products to 5 servings a day.

The pregnant women and teenager should get from 8 to 10 hours of sleep as recommended by her physician. Daily exercise such as walking is important but an exercise program should also be recommended by her physician.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize that daily health practices affect confidence and achievement, social development, and wellness; plan a personal program of physical activity, rest, and food selection; and discriminate between responsible and irresponsible choices that affect personal health.

Health **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Discuss the Dietary Guidelines for Americans.
- Make wise food choices when eating away from home.

ASSESSMENT CRITERIA

- Discuss food choices at a fast food restaurant.
- Compare food choices at fast food restaurants with the Dietary Guidelines for Americans.

ACTIVITIES & STRATEGIES

Discuss with the students the following information about eating at a fast food restaurant:

- Many meals that are served in fast food restaurants are high in fat and calories. For example, a meal of a hamburger, fries, and a shake contain nearly half the calories recommended for an adult male in one day.
- Most fast food meals lack one or more nutrients that are essential in the diet because they typically do not provide fruits, vegetables, and milk. The lack of these food items leads to an omission of nutrients like vitamin A, folacin, iron, copper, and pantothenic acid in the diet.
- Fast food is extremely high in sodium. High amounts of sodium may contribute to hypertension, a problem that may result in a stroke or heart attack.
- Fast food restaurants offer many foods that are high in fat. An overabundance of fat in the diet may lead to obesity, heart disease, stroke, and certain types of cancer.
- Some fast food restaurants have salad bars and provide real dairy products instead of products that are not made from milk.

Distribute and review the worksheet, "Fast Food Factors." After the students complete the worksheet, review the answers with the class.

Distribute fast food restaurant menus to students. Instruct them to circle the foods that are low in sodium and fat, and put an X on the foods that are high in sodium and fat.

RESOURCES & MATERIALS

Worksheet: "Fast Food Factors"

Handout: "Appendix F: Dietary Guidelines for Americans"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Menus from several fast food restaurants

ANSWER KEY

Total number of calories = 1067
Total number of grams of fat = 56
Total milligrams of sodium = 1090
Answer for questions one through four will include a choice of numbers 1, 3, 4, 5, or 6

TEACHER TIP

Remind students that it is recommended that no more that 30 percent of the day's calories come from fat.

In advance, ask the cafeteria manager to discuss how school lunches differ from fast food menus. (Include a discussion of the snack bar, if available.)

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to discriminate between responsible and irresponsible choices that affect personal health.

NAME ______________________________ **DATE** ______________

Fast Food Factors

Guidelines for Choosing Nutritious Fast Food Meals

- Choose a restaurant that provides a variety of foods which are low in calories and fat.
- Bring fresh fruit and vegetables from home to supplement lunch. This will balance a meal of a hamburger and glass of milk.
- Choose a plain hamburger or cheeseburger instead of sandwiches that have a "special sauce," because the addition of sauce increases the calorie count.
- Hamburgers listed as "junior" are smaller and contain fewer calories.
- Shakes add up to 350 calories, at least. It is wiser to choose low-fat milk or juice.
- Chicken and fish sandwiches are not necessarily better than hamburgers. They are often breaded and fried, so they are usually high in fat.
- Many fast food restaurants have salad bars. To keep a salad low in fat and calories,
  - use a dressing of vinegar and a little olive or vegetable oil or low-calorie salad dressing.
  - substitute low-fat cottage cheese for grated cheese
  - add kidney beans
  - top the salad with bean sprouts instead of croutons
  - limit bacon bits, egg, and salads made with mayonnaise

Using the handout, "Dietary Guidelines for Americans," list at least four reasons why the following fast food meal does not rate as a nutritious meal. Keep the following information in mind:

- An adolescent usually eats between 2200 and 2500 calories in one day in order to maintain their weight. This means that they should not eat more than 850 calories, if one-third of their calorie needs are consumed at lunch.

- It is recommended that fat intake be limited to 30 percent of the total day's calorie intake. Therefore if one meal should not contain more than 850 calories, then eating more than 28 grams of fat would provide more than 30 percent fat for that meal.

Food Items	Calories	Grams of Fat	Milligrams of sodium	Calories from Fat
Double Cheeseburger with bacon	520	31	728	54 %
French Fries, one regular serving	227	13	160	52 %
Chocolate Shake	320	12	202	34 %
Totals				

Look at the handout, "Dietary Guidelines for Americans," and list four reasons why you would want to limit this type of meal in your diet.

1.

2.

3.

4.

5. How could it be improved?

Health **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify the factors involved in preventing food-borne illness.

ASSESSMENT CRITERIA

- Classify types of microorganisms that cause food-borne illness.
- Identify sources of food-borne illness in case scenarios.

ACTIVITIES & STRATEGIES

Explain that microorganisms are tiny living cells that can be seen only with a microscope and that they are everywhere—in the body, in the soil, in the water, and in the air. The four types of microorganisms that affect food are bacteria, viruses, yeast, and molds.

Discuss the information on the transparency, "Types of Microorganisms."

Distribute and review the worksheet, "Microorganism Search," with the students.

After completion, discuss each case scenario with the students.

Let the students grow mold in class, then use a microscope to look at the mold. Mold can be grown on an agar dish by touching it, kissing it, or putting scrapings from under one's nails on it.

RESOURCES & MATERIALS

Transparency: "Types of Microorganisms"

Worksheet: "Microorganism Search"

Salmonella Sal (filmstrip) available from the NET Library, Texas Department of Human Services. The Library, 434-W 701 West 51st Street, Austin, Texas 78769 (512) 450-3530

Overhead projector

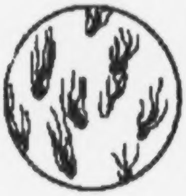
In advance, ask the cafeteria manager to arrange a tour of the cafeteria and have the students observe various health regulations for food service facilities such as temperature, sanitizing, use of litmus paper, storage, and serving.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to discriminate between responsible and irresponsible choices that affect personal health.

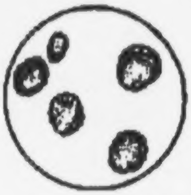
Types of Microorganisms

Bacteria



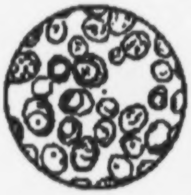
- Bacteria are more commonly involved in food-borne illness than are viruses, yeasts, and molds.
  - Bacteria grow and multiply at room temperature, 60°F – 125°F.
  - The longer food is kept at room temperature, the more bacteria will multiply.
  - High temperatures will kill most microorganisms and cold temperatures keep them from multiplying.

Viruses



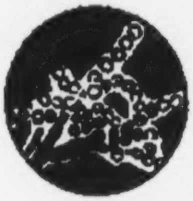
- Viruses cause illnesses such as colds, influenza, and infectious hepatitis.
  - Unlike bacteria, viruses cannot grow and multiply on their own but must depend on a living host to reproduce.
  - For this reason, viruses do not increase in number while they are in food, they merely transport themselves to it.

Yeasts



- Yeasts are fungi that require sugar and moisture for survival.
  - Yeasts often consume these ingredients in food products and spoil the food in the process.
  - In general, yeast spoilage can often be recognized by the presence of bubbles and an alcoholic smell or taste.
  - Yeast spoilage can create a slime on fruit juices or pickle brine, or a pink discoloration in cottage cheese.
- Yeast growth can be inhibited by proper refrigeration.

Molds



- Molds are furry-looking fungi that can grow on almost any food at almost any storage temperature, and under almost any conditions.
  - Certain molds produce toxins that have been known to cause cancer in animals.
  - Soft food items with mold should be discarded.
  - Some molds give a musty odor and flavor to foods. Some people have developed allergies to certain molds. These allergies affect the sinuses, eyes, ears, and respiratory tract.

NAME ______________________________ **DATE** ____________________

Microorganism Search

The four types of microorganisms that affect food are bacteria, viruses, yeast, and molds. Their presence in food may or may not be harmful to humans. To avoid food-borne illness, it is wise to be careful how food is handled and to be conscious of how long and at what temperature it has been stored.

Instructions: Draw the image of the microorganism in the appropriate space. Then answer the questions regarding these microorganisms.

Case Scenarios:

① Thomas has allergies, he has a runny nose and itching eyes after eating a piece of food that had a furry-looking growth on it. Which type of microorganism may have caused this reaction? What should he have done to make the food safe to eat in the first place?

①

② Susan has a stomachache after eating chicken salad that sat out unrefrigerated overnight. Which type of microorganism may have caused this? What could Susan have done to prevent this illness?

②

③ Brian has a cold. He shared a glass of cola with his friend who was sick. Which type of microorganism may have caused this? What could he have done to prevent this illness?

③

④ Paula opened a carton of cottage cheese and noticed that it had a pink discoloration. What type of microorganism may have caused this?

④

LESSON OBJECTIVE

Discuss nutritional needs of adolescents.

ASSESSMENT CRITERIA

Compare three days of personal lunch choices to the requirements of the school lunch patterns.

ACTIVITIES & STRATEGIES

Discuss the nutritional needs of adolescents and how school lunches meet these needs:

- A School Lunch Pattern has been established by the government. It requires school food service to include certain types and amounts of foods to ensure the nutritional integrity of each meal.
- The government helps schools who serve lunches that follow this pattern by offering them food, technical advice, supplies, and reimbursement for meals served.
- The school cafeteria must abide by federal nutritional guidelines which require that the meal provide one-third of the Recommended Daily Allowance (RDA) for certain nutrients.
- Growth and activity determine calorie needs; therefore, growing active teenagers may need more calories. They should eat a nutritionally balanced diet emphasizing complex carbohydrates and limiting foods high in fat and sugar.
- Muscle mass is not increased by eating extra protein. Certain types of exercise increase muscle mass.

Distribute and review the worksheet, "Schools Serve It Up Right," with the students. Allow for completion, then ask students to share with the class their plans for improving their diet. Offer additional suggestions, if necessary.

Adapted from: "Preparing Foods and Planning Menus," Home and Garden Bulletin No. 232-8, United States Department of Agriculture, Human Nutrition Information Service, U.S. Government Printing Office: Washington, D.C, p. 10

RESOURCES & MATERIALS

Worksheet: "Schools Serve It Up Right"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESRIV*

In advance, ask the cafeteria manager to discuss the School Lunch Pattern and how the government helps school food service programs.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to plan a personal program of physical activity, rest and food selection.

NAME ______________________ **DATE** ______________

Schools Serve It Up Right

- Chart everything you ate for lunch over the past three days. List your lunch item foods in the ***What I Ate for Lunch*** column.
- Compare it with the School Lunch Pattern below. Under the column titled, ***What My Choice Lacks,*** write the names of the food groups that your lunches lack.
- List ways to improve each day's lunch, in the ***How Could I Improve My Diet?*** column.

School Lunch Pattern

Components	Food Items	Minimum Quantities Per Meal
Meat or Meat Alternate	Lean meat, poultry, or fish	2 oz.
		or
	Cheese	2 oz.
		or
	Large eggs	1
		or
	Cooked dry beans or peas	1/2 cup
		or
	Peanut butter or other nut or seed butters	4 tbsp.
Vegetables and/or Fruits	Two or more servings of vegetables or fruits or both to total	3/4 cup
Bread **or** **Bread alternate**	A serving is: • 1 slice of whole-grain or enriched bread • A whole-grain or enriched biscuit, roll, muffin, etc. • 1/2 cup of cooked whole-grain or enriched rice, macaroni noodles, whole-grain or enriched pasta products, or other cereal grains such as bulgur or corn grits • A combination of any of the above	8 per week
Milk	A serving of fluid milk The following forms of milk must be offered: • Whole milk • Unflavored low-fat milk	1/2 pint (8 fl. oz.)

What I Ate For Lunch	*What My Choice Lacks*	*How Could I Improve My Diet?*
Day 1		
Day 2		
Day 3		

Health **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Discuss ways to achieve a low-fat diet.

ASSESSMENT CRITERIA

Analyze an adolescent diet and propose alternative food choices.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:

- Fat is one of the essential nutrients and performs several functions in the body. Fats are a source of the essential fatty acids.
- Linoleic acid, an essential fatty acid, is found in polyunsaturated fat products like corn, safflower, and soybean oils. It is important for clotting blood and lowering blood pressure.
- Fats transport the fat-soluble vitamins A, D, E, and K throughout the body.
- Fats serve as an energy source.
- It is not necessary to consume a high-fat diet because the body makes fat from excess carbohydrates and proteins not used for energy. However, diets containing excess fat can lead to health risks, such as coronary heart disease and cancer.
- High-fat diets may lead to elevated blood cholesterol levels. People with abnormally high blood cholesterol levels are in a high-risk group for advanced atherosclerosis which can lead to heart attack and stroke.
- People should reduce their intake of saturated fats to maintain a normal blood cholesterol level.
- Alternative choices for high-fat foods include:
  - ° substituting low-fat or nonfat plain yogurt for sour cream on baked potatoes, in dips, and in other recipes
  - ° choosing low-fat or nonfat milk instead of whole milk
  - ° eating a piece of fresh fruit instead of ice cream or pie
  - ° selecting low-fat cheese or skim milk cheese

Distribute and review the worksheet, "Cut the Fat," with the students. After completion, discuss the students' low-fat alternatives to Trevor's high-fat diet.

RESOURCES & MATERIALS

Worksheet: "Cut the Fat"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*.

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

"Changing the Course: Intermediate Curriculum," American Cancer Society.

ANSWER KEY

The students' answers may vary. Guidelines should be applied to the following foods:

Breakfast:	**Butter, whole milk, sausage**
Snack:	**Glazed doughnut**
Lunch:	**American cheese, ham, blue cheese dressing**
Dinner:	**Fried chicken, butter, sour cream, chocolate cake, ice cream**

In advance, ask the cafeteria manager to talk about how cafeteria foods are modified to reduce fat.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to recognize that daily health practices affect confidence and achievement, social development, and wellness.

NAME ______________________________ **DATE** ____________________

Cut the Fat

Trevor was concerned about his health. He learned from his health teacher that many Americans select low-fat diets in an attempt to reduce their risk of coronary heart disease and cancer. He learned that the average American diet contains too much fat, and it is recommended that 30% or less of calories in the diet come from fat. Trevor wanted to reduce his consumption of fat, so he wrote down everything he ate the day before and analyzed the list, using these guidelines:

- Choose to bake, broil, braise, or steam foods; eliminate frying.
- Skin poultry, and trim visible fat from meats.
- Reduce consumption of foods high in saturated fat.
- Choose unsaturated fats when possible.
- Use nonstick sprays in frying pans for sautéing.
- Use all-vegetable margarine instead of butter.
- Read labels to learn the fat content of foods.
- Choose low-fat or fat-free menu items and snack foods.
- Refrigerate soups and stews before serving, and skim off hardened fat.
- Use low-fat and nonfat dairy products.
- Reduce consumption of bacon, sausage, and luncheon meats.
- Use herbs, spices, and lemon juice to season and flavor foods.
- Choose canned fish products packed in water.
- Use low-fat, low-calorie salad dressings.
- Reduce intake of high-fat desserts.
- Use vegetable protein sources such as lentils, dried beans, and peas.

Foods High in Unsaturated Fat

- Vegetable oils—corn, safflower, soybean, cottonseed, sunflower
- Nuts—peanuts, pecans, cashews
- Soft margarines and spreads
- Canola oil, olive oil

Foods High in Saturated Fat

- Butter and lard
- Tropical oils—coconut, palm, and palm kernel
- Sour cream, ice cream, whole milk products
- High-fat cheeses
- Bacon and some luncheon meats
- Cakes and pastries

Instructions: Examine Trevor's food inventory, and offer him suggestions for achieving a low-fat diet. Use the information in the guidelines above. Review the foods he consumed, and alter replace, or delete food items that contribute to a high-fat diet. (There are at least 12 items.)

What Trevor Ate

Breakfast: Pancakes with butter and syrup, sausage, and whole milk

Snack: Glazed doughnut

Lunch: Chef salad (American cheese, ham, lettuce, tomatoes, peppers, blue cheese salad dressing)

Dinner: Fried chicken,
Mushrooms sautéed in butter,
Baked potato with sour cream,
Chocolate cake with ice cream

What I Suggest

Example:

1. Butter: Use low-fat, all vegetable margarine instead of butter.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

LESSON OBJECTIVE

Describe the relationship between nutrition and the prevention and treatment of health problems (cancer, common cold, diabetes, heart disease, PKU).

ASSESSMENT CRITERIA

- Discuss the relationship between dietary fat and the prevention of atherosclerosis.
- Synthesize information on ways to trim fat from their diets.

ACTIVITIES & STRATEGIES

Discuss the following facts with the students:
- Of the 250 million people who live in the United States, many are at risk for developing cardiovascular disease.
- Cardiovascular disease is a disease of the heart and blood vessels. One of the cardiovascular diseases is known as ***atherosclerosis***. A-ther-o-scler-o-sis.
- Atherosclerosis is a condition where fats and other substances actually pile up in mounds on the inside walls of your arteries. Arteries are blood vessels that move blood from the heart to any part of the body.

Distribute the handout, "Nightmare on Vessel Street." After the students have read the handout, ask them to name the harmful agent in this disease. (Saturated fat and cholesterol).

Discuss the definition of fat and cholesterol given in the opposite column.

Conclude that one should limit foods that contain saturated fat and cholesterol. Saturated fat comes from animal products, coconut oil, and palm oil.

Does this mean that you should not eat cheese and meat, or drink milk? No more butter on your baked potato? No cheeseburgers or pizza allowed?

Explain that we can reduce our total intake of fat and still eat our favorite foods. One way to do this is to balance our diet. For example, if we eat a high-fat food or meat, then we can adjust and balance our diet by eating low-fat foods for the next few meals. There are many foods from animals such as low-fat cheese and milk in which the fat and cholesterol levels have been lowered .

Refer to the handout, "Nightmare on Vessel Street," and discuss the suggestions for keeping the arteries clear of fat.

RESOURCES & MATERIALS

Handout: "Nightmare on Vessel Street"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Teacher information:
Define ***fat.***
- Fat is a source of energy from food. It is a vital nutrient.
- Some fat is needed in the diet, but the Dietary Guidelines recommend 30 percent or less of our calories come from fat, and less than 10 percent of these calories come from saturated fat.
- Fat carries vitamins A, D, E, and K

Define ***cholesterol***:
- Cholesterol is a fat-like material found only in animals, not plants.
  - ° meat, seafood
  - ° dairy products (butter, whole milk, cheese)
  - ° egg yolks (the white has no fat.)
  - ° foods fried in animal fat
- Our bodies make all the cholesterol we need; we do not need to eat it.
- The body uses saturated fat to make cholesterol.
- Cholesterol is present in everything we eat that comes from an animal.
- Cholesterol is not in food from plants such as fruits, vegetables, grains, nuts, seeds, beans, and peas.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The students shall be provided opportunities to plan a personal program of physical activity, rest, and food selection and discriminate between responsible and irresponsible choices that affect personal health.

NIGHTMARE ON VESSEL STREET

Picture yourself asleep on your bed in your room. You dream the walls begin to ooze a greasy substance and as it covers the wall it collects in mounds. Your room gets smaller and smaller as the ooze builds up on the walls. It keeps piling up, layer on layer, until the door to your room is blocked so that you can hardly squeeze through to get to the hallway!

This is what happens on the inside of the arteries of a person who is suffering from atherosclerosis. The fat deposits on the wall of the arteries become so thick that the blood can barely squeeze through it. This puts a tremendous amount of pressure on the heart and the walls of the veins and arteries. (They carry the blood to and from the heart.)

This problem can cause heart attacks and strokes. Above all other diseases, more lives are lost every year in this country from the disease caused from this problem of fat build-up in the heart...atherosclerosis.

How to Keep My Arteries Clear of Fat:

- **Be a label reader**; the label will show how much fat the food contains.
- If it's fried, it's fatty! **Eat it baked, broiled or steamed**. French fries and potato chips are fried; eat a baked potato instead.
- **Use lower fat versions** of milk, cheese and yogurt. Milk that has less than 1/2% fat is better than whole milk.
- **Think substitutes**. Choose nonfat yogurt or a bunch of grapes instead of candy or a doughnut.
- **Think lean**. Choose lean meat, fish, poultry, and dry beans and peas as protein sources.
- If you can see the fat on meat, **trim it** off.
- **Remove the skin of poultry** before eating.
- Cook with a non-stick cooking pot or pan so that it does not have to be greased.
- **Go easy on foods that do not have any nutritional value such as** gravies, butter, margarine, mayonnaise, salad dressings, and oil.
- **Use herbs, spices, lemon, or salsa for seasoning** on meats and vegetables.
- **Skim the fat.** Chill soup, broth, or meats after cooking, then spoon off the fat collected on top before reheating to serve.

LESSON OBJECTIVE

Explain the role of nutrition and physical fitness in maintaining good health.

ASSESSMENT CRITERIA

- Distinguish between facts and myths concerning protein in the diet.
- Plan a menu according to the food groups and the needs of an athlete.

ACTIVITIES & STRATEGIES

Write this statement on the chalkboard:
If you play a sport or are involved in a strenuous exercise program, you need extra protein in your diet.

Ask the students to raise their hands if they believe this statement is true.

Discuss the following nutrition facts with the class:

- The extreme activity of training and competing does not cause protein loss.
- Extra protein in the diet is not necessary.
- The protein requirement for a person is the same whether competing or not competing.
- While adequate protein is essential to the maintenance of muscles, extra protein is broken down and stored as fat.
- Protein has no effect on strength. Strong muscles come from exercise, training, and a nutritionally adequate diet.
- Extra carbohydrates should be added to the diet to supply exercise energy and training energy.
- Taking protein supplements is unnecessary for training.
- Eating extra meat also leads to an increase in fat because fat is usually consumed with the protein.

Distribute the handout, "Appendix C: A Pattern for Daily Food Choices." Emphasize the fact that a diet based on this chart will provide all the protein an athlete needs.

Ask the students to plan one day's menu, based on the guidelines on the handout.

Discussion questions:

- If you play a sport, how has this lesson changed your beliefs about the statement?
- What can a person do to improve eating habits?
- Why is it important for everyone to know about the prevention of coronary artery disease?

Health **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Handout: "Appendix C: A Pattern for Daily Food Choices"

Video: "Body Culture," Texas Beef Industry Council, 8310 Capitol of Texas Highway, N, Suite 440, Austin, Texas, 78731

"Food Power: A Coaches Guide," National Dairy Council, 6300 N. River Road, Rosemont, Illinois 60018-4233

TEACHER TIP

Explain to the students that they need to eat the required number of servings of complete proteins in order to meet their protein requirements. This can be achieved by one serving of meat (about the size of a deck of cards) or by combining two incomplete proteins.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to plan a personal program of physical activity, rest, and food selection; discriminate between responsible and irresponsible choices that affect personal health; recognize body systems and their functions.

Health **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Determine the relationship between nutrition and weight control.

ASSESSMENT CRITERIA

- Identify nutrition as an essential element of weight maintenance.
- Distinguish factual and fictitious ideas about weight control.

ACTIVITIES & STRATEGIES

Define the words, *fact* and *fallacy*. Give an example, then ask students to give some examples.

Distribute the worksheet, "Facts and Fallacies," to the students. Review each statement then allow time for them to complete the worksheet.

Explain the difference between overweight and overfat.
- *Overweight* means that you weigh more than the average height and weight tables indicate you should. However this could be due to muscle weight which is healthy.
- *Overfat* means that you have too high a percentage of body fat.
  - ° The average healthy young woman has between 22 and 26 percent body fat.
  - ° The average healthy young man has between 15 and 18 percent body fat.

Write the following principle on the chalkboard:
The balance principle means that the number of calories consumed must be balanced with the number of calories used.

This principle affects weight in three ways:
- Weight loss occurs if more calories are used than consumed.
- Weight is maintained if the same number of calories are consumed as used.
- Weight is gained if more calories are consumed than used.
- Aerobic activity causes weight loss from fat not muscle tissue.

Emphasize that nutrition and weight maintenance are lifelong challenges because food choices are learned behavior.

Review the answers to the worksheet, then instruct the students to rephrase each false statement to make it a true statement.

Give the students the option of writing their own additional true statements.

RESOURCES & MATERIALS

Worksheet: "Facts and Fallacies"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

ANSWER KEY

All answers are false. Explanations are listed below.

1. Complex carbohydrates have 4 calories per gram just like protein, but with very little fat. Research studies have shown that the body uses more energy (calories) to metabolize carbohydrates than is used to metabolize fat. Intake of complex carbohydrates is highly recommended for weight loss.
2. The use of laxatives and diuretics for weight loss is not recommended. The overuse of these products causes damage to gastrointestinal functions, electrolyte imbalances, and dehydration.
3. Fruit yogurt contains approx. 180 calories. A plain baked potato contains approximately 90 calories.
4. Weight loss of more than 2 lbs. per week is not recommended.
5. Many high-protein foods contain significant amounts of fat which makes them higher in calories than many other foods.
6. Diet pills are appetite suppressors. They send signals to the brain that the stomach is full and reduces the amount of food one consumes.
7. Grapefruit is a nutritious fruit that is a good source of vitamin C. No food can "burn" calories.
8. Additional weight loss could be very dangerous for a person whose weight is 20% below average. A normal body weight for height and bone structure is necessary to maintain optimal health.
9. Gelatin is an incomplete protein and must be combined with other protein sources in order to provide the 9 essential amino acids needed by the body.
10. See response to #1.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be given opportunities to plan a personal program of physical activity, rest, and food selection.

NAME ______________________ **DATE** ______________

FACTS AND FALLACIES

Directions: Write (T) true or (F) false for each statement, and in the space below, rephrase each false statement to make it a true statement.

☐ 1. Breads and cereals should not be eaten if one is watching his or her weight because they are fattening.

☐ 2. A good way to lose unwanted pounds is to use laxatives or diuretics.

☐ 3. A baked potato is higher in calories than the average container of fruit yogurt.

☐ 4. A good weight loss rate is five pounds a week.

☐ 5. If a food is high in protein, such as meat, it is naturally low in calories.

☐ 6. Diet pills help one lose weight because they don't let the calories one eats turn into fat.

☐ 7. Eating lots of grapefruit burns calories.

☐ 8. A person who weighs 20 percent below the average for his or her height, bone structure, and weight should lose five more pounds to create a cushion.

☐ 9. Gelatin is an excellent source of protein.

☐ 10. Carbohydrates have more calories than proteins, or fats, so they should be avoided during a weight loss program.

Health **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Evaluate the claims made by promoters of fad diets.
- Distinguish between nutrition facts and fallacies.

ASSESSMENT CRITERIA

- Analyze magazine advertisements that promote fad diets.
- Recognize characteristics of fad diets.

ACTIVITIES & STRATEGIES

Discuss the following information about fad diets:

- Fad diets often appeal to the person who wants to take off weight fast.
- Fad diets are only popular for a short time and usually promise almost immediate weight loss.
- Fad diets are not effective over the long-term and usually produce weight loss which is generally loss of water rather than loss of body fat.
- Fad diets are scientifically inaccurate, nutritionally unsound, overly restrictive, and usually take away the pleasure of eating.
- A person may lose weight quickly with fad diets, but the diets do not teach new eating habits.
- Many fad diets can be hazardous to the health of the individual.
- Television, radio, magazines, and newspapers often advertise fad diets.

The healthy way to lose weight includes visiting the doctor, setting realistic goals, choosing food wisely, having a healthy attitude about weight control, being evaluated regularly, and exercising.

Growth and activity determine calorie needs; therefore, growing, active teenagers may need more calories. They should eat a nutritionally balanced diet emphasizing complex carbohydrates and limiting foods high in fat and sugar.

Distribute and review the worksheet, "Find the Fad." Instruct the students to complete the worksheet by searching magazines for advertisements of fad diets. Then, answer the questions about the diet these advertisements are promoting.

After completion, ask the students to present their findings to the class.

RESOURCES & MATERIALS

Worksheet: "Find the Fad"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Magazines

Answer Key

1. **Student answers will vary.**
2. **Student answers will vary.**
3. **This activity can be done by an individual student or in small groups of students.**

TEACHER TIP

Avoid allowing discussions of personal weight loss programs and fad diets. Focus instead on factual nutrition information and the development of valuable life skills.

In advance, ask the cafeteria manager to discuss with the class what lower calorie foods are available in the cafeteria. Ask the class to suggest low-calorie foods that they would like to see offered in the cafeteria.

ESSENTIAL ELEMENT

Health. Concepts and skills that foster individual personal health and safety. The student shall be provided opportunities to discriminate between responsible and irresponsible choices that affect personal health.

NAME ______________________________ **DATE** ________________

Find the Fad

Six Types of Fad Diets

Fasting

The worst diet to engage in is fasting, or going without food for several days or longer. The fast does not provide the fresh supply of nutrients your body requires every day. The body becomes the source of fuel during a fast and will use protein from body tissues such as muscles to supply energy. The results of fasting range from depression to sudden death.

Single Food Diets

Eating only one food or combination of foods cannot result in weight loss over the long term. These diets work at first only because they are low in calories. These diets do not provide enough nutrients and are monotonous.

Pills

Diet pills have serious side effects, and they do not result in permanent weight loss. Some promoters say that their pill lowers the appetite; other pills cause the body to lose water, but not fat. These pills can cause shakiness, high blood pressure, rapid heartbeat, and kidney damage.

Diet Candies

Some diet candies contain sugar to lower the appetite temporarily. Others swell the stomach, thereby decreasing the appetite. These pills do not help improve eating habits, and they do not help people lose weight permanently.

Liquid Protein Diets

Most of these diets are nutritionally incomplete, although some claim to supply complete nutrition when taken in place of all food. It is impossible to know if this is true. The Food and Drug Administration requires that warning labels appear on these diets because some can cause illness and even death.

Low-Carbohydrate, High-Protein Diets

These diets do not provide enough of the energy-rich carbohydrates that the body needs. Most of the calories in these diets come from protein. The weight lost from these diets is due to water loss. These diets do not provide essential nutrients and can cause nausea, weakness, dehydration, and kidney damage.

Instructions:
Search a magazine for an advertisement of a fad diet. Attach the advertisement to the back of this worksheet.
Answer the following questions:

1. What diet is your advertisement promoting? Why?

2. Why is the diet unhealthy?

3. Write an advertisement that promotes a healthy diet. Name it. Which magazines do you want to carry your advertisement?

Language Arts **Grade 7**

7

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Distinguish between nutrition facts and fallacies.

ASSESSMENT CRITERIA

- Compose a paragraph describing a food fallacy.
- Recognize fallacies about food.

ACTIVITIES & STRATEGIES

Define and discuss the terms:
- fact—the quality of being true
- fallacy—a false idea

Brainstorm with the students about folk tales they may have heard, and relate this concept to fallacies about certain foods.

Distribute and review the handout, "Nutrition Fallacies," with the students. Tell them to respond to the statement at the bottom of the page.

Assign each student one of the fallacies listed on the handout. Instruct them to write a composition as though they are a newspaper reporter who is exposing the promoter of the fallacy as a fraud. Tell students to include information that would make the article interesting such as:
- name of the promoter
- name and price of the product
- target audience
- information given on the handout

Have some library resource books available for the students' reference.

After completion, ask some students to give a synopsis of their compositions to the class.

Tell students to refer to their handouts. Ask students to share their responses to the statement at the bottom of the page. Discuss whether or not their response is a fallacy.

RESOURCES & MATERIALS

Handout: "Nutrition Fallacies"

Library books

ESSENTIAL ELEMENT

Language arts. Writing concepts and skills. The student shall be provided opportunities to write for a variety of purposes and audiences.

NAME ______________________________ **DATE** ____________________

Nutrition Fallacies

Fallacies about food

Sometimes people accept ideas about foods and nutrition without question. Practicing these beliefs can often be harmful to our health. Some of the fallacies include:

- Milk is a necessary food up until the age of five; after that, people do not need to drink milk.
- Beets and spinach build blood.
- Grapefruits are believed to cause weight loss by burning fat cells.
- Eating a diet high in protein helps to build muscles.
- Fish is good for the brain.
- Lecithin cures and prevents heart disease and arthritis.
- Bee pollen increases athletic capability.

Magical cure-alls

Food quacks are people who try to use a food fad to sell a product. They also base their beliefs on fallacies or misinformation and exaggerated claims. The main interest of these quacks is to make money. Food quacks promote their products in ways that are not honest. Two common foods promoted by quacks are:

> Fertilized eggs - Some people believe that fertilized eggs contain more and better nutrients than unfertilized eggs.
> Blackstrap molasses - Some people believe that this food can cure cancer, ulcers, varicose veins, and arthritis.

It is wise to ask yourself these questions when you hear unbelievable messages about foods. If a claim seems too amazing to be true, it probably is.

- Is the speaker a nutritionist with qualifying credentials from a reputable university?
- Does the person promote one food and encourage the exclusion of other foods?
- Does the promoted food sell for a high price?
- Does the person ridicule authorities such as the U.S. Food and Drug Administration?

Have you heard any questionable messages about food? Below, write one of these messages that you think is a fallacy.

Language Arts **Grade 7**

7

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Make wise food choices at snack time.
- Determine the effects of peer pressure on food choices.

ASSESSMENT CRITERIA

Describe factors involved in deciding to eat healthful foods among friends.

ACTIVITIES & STRATEGIES

Discuss the following information regarding food choices:

- Families strongly motivate our food choices from the time we are born, but friends become an important influence as we grow up.
- Food is often part of social experiences. Friendship and food often go together.
- Friends can often influence us to make less healthful choices regarding food.
- Making wise food choices is fundamental for good health.
- The school breakfasts and lunches offer healthy foods that provide essential nutrients.
- The U.S. Department of Agriculture and the U.S. Department of Health and Human Services have issued guidelines about nutrition, good health, and the prevention of disease.

Review and discuss the transparency, "Appendix F: Dietary Guidelines for Americans," with the students.

Distribute and review the worksheet, "Dear Diary," with the students and allow time for completion. Then, ask students to share and discuss some of their reasons for making certain choices about foods when they are among their friends.

RESOURCES & MATERIALS

Worksheet: "Dear Diary"

Transparency: "Appendix F: Dietary Guidelines for Americans"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Overhead projector

In advance,invite the cafeteria manager to explain to the class what influences the choices of foods that are served in the cafeteria.

ESSENTIAL ELEMENT

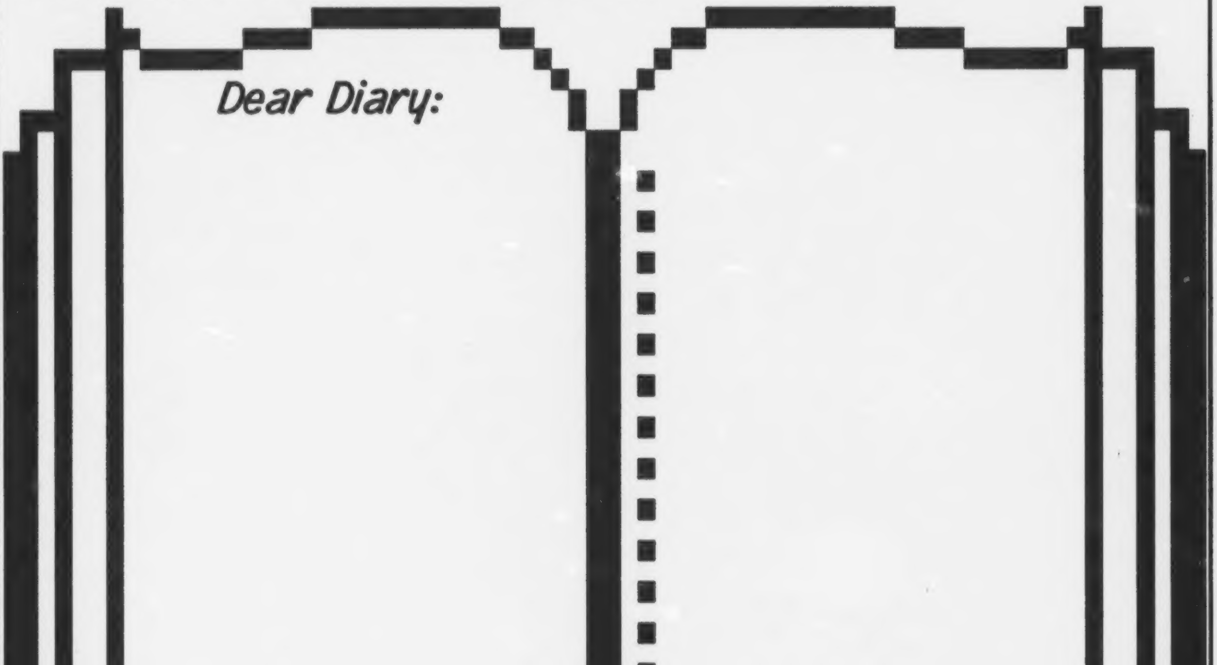
Language arts. Writing concepts and skills. The student shall be provided opportunities to write for a variety of purposes and audiences.

NAME ______________________________ **DATE** ______________

Dear Diary

After learning nutrition in class, you have decided to improve your diet by reducing your fat intake. Today, at school, you and your friends were trying to decide what to do for lunch. You would have liked to eat in the cafeteria because you are interested in healthful foods and know that school food service provides nutritious meals. Your friends wanted to eat at a nearby fast-food restaurant. You knew that if you ate with them you would end up feeling pressure to choose foods that are less healthful. You make the decision to go to the fast-food restaurant instead of the cafeteria because you don't want your friends to make fun of you. You make food choices that are less healthy, for example, you choose a soft drink instead of milk, and french fries instead of salad. You are upset that you let your friends pressure you into doing something you did not want to do, so you write your feelings down in your personal diary.

Instructions: Write a short essay stating reasons why it is difficult to make an unpopular decision among friends. Include the fact that you would rather have eaten a healthful meal in the school cafeteria. List several reasons why you should have stuck to your convictions regarding eating foods that are nutritious. Devise a strategy that will allow you to stand by your decision to eat healthful foods the next time this situation happens. Use the back of this page if necessary.



LESSON OBJECTIVE

Explain the relationship of high intakes of sodium to hypertension.

ASSESSMENT CRITERIA

Compose a report for a person who has hypertension.

ACTIVITIES & STRATEGIES

Discuss with the students the following information about sodium and hypertension:

- Sodium is one of the elements found in salt (sodium chloride).
- Sodium is a mineral that functions in the body as an electrolyte. Electrolytes affect the way fluid is distributed in the body and aid the nervous system in transmitting nerve impulses that control muscle action. This transmission of nerve impulses is what keeps the heart beating normally.
- There is no minimum daily requirement or Recommended Dietary Allowances for sodium. The American diet shows no evidence of shortage of this mineral. In fact the opposite is true. Excessive consumption of sodium may result in hypertension. Hypertension, or high blood pressure, means that the heart must work much harder to pump the blood. The risks associated with high blood pressure include strokes, heart attacks, and kidney failure. High blood pressure can be hereditary, a result of obesity, or may be a result of too much sodium in the diet.
- Due to the increased incidence of hypertension in adults, health professionals recommend that persons without health problems moderate their sodium intake. The National Research Council, Food and Nutrition Board, recommends that healthy adults and children consume no more than 2400 mg. of sodium per day (July, 1989).

A list of commonly eaten foods that are high in sodium is included in the opposite column. Provide the students with this list either by using a transparency or the chalkboard.

Explain to the students that they are to write a one-page report pretending that they are doctors writing to their patients. Each student is to give background information about hypertension to a patient who has recently been diagnosed with high blood pressure. They are to include reasons why their patient needs to control his or her sodium intake and list the types of foods the patient should avoid.

RESOURCES & MATERIALS

Sodium Content of Some Foods

Food	Amount	Sodium Content (mg)
Crackers, saltine	4	165
Bacon	3 slices	303
Catsup	2 Tbsp.	312
Salt	1 tsp.	2100
Worcestershire	1 Tbsp.	315
Cheese, processed	1 oz	406
Frankfurter (beef & pork)	1	504
Salad dressing, ranch	1/2 cup	522
Peanuts, salted	1 cup	626
Pizza, cheese	1 slice	699
Luncheon meat	2 pieces	810
Cottage cheese	1 cup	850
Soup, canned tomato	1 cup	872
Dill pickle	1 whole	928
Olives, green	10	936
Burrito, bean	1	1030
Ham, lean	3 oz.	1128
Cheeseburger	4 oz. patty	1224
Chicken patty sandwich	1	1252
Corn dog	1	1252
Enchilada	1	1332
Smoked salmon	3 oz.	1700

Source: "Nutritive Value of Foods," *Home and Garden Bulletin No.72,* United States Department of Agriculture, Revised April, 1981.

In advance,ask the cafeteria manager to discuss with the class how the cafeteria foods are modified to lower sodium content.

ESSENTIAL ELEMENT

Language arts. Writing Concepts and skills. The student shall be provided opportunities to write for a variety of purposes and audiences.

Language Arts **Grade 7**

7

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Discuss wise consumer food-buying skills.
- Explore the influence of food advertising and the media on food habits.

ASSESSMENT CRITERIA

Analyze language used denotatively and connotatively in literary selections.

ACTIVITIES & STRATEGIES

Instruct students to use the dictionary to find definitions for:
- *Connotation*
- *Denotation*

Ask the students for examples of how they would use connotative language and denotative language to achieve a purpose.

Point out that, in order for students to make sound judgments, they must be able to recognize connotative and denotative language. For example: advertisers may mislead consumers by promoting the absence of contents that do not exist in the product anyway (connotation.) An example of this practice would be a corn-oil margarine label stating "no-cholesterol" which might lead shoppers to assume that there is cholesterol in competing brands of corn-oil margarine. The fact is that no vegetable oil contains cholesterol (denotation).

Write the examples of product claims in the opposite column on the chalkboard and instruct the students to analyze these claims.

Legislation is underway to end connotations on packaging.

Ask students which of these statements elicits the more positive response and discuss their responses:
- fortified with essential nutrients
- vitamins added

Assign students to look for similar statements that have the same meaning but promote through connotation
  - in magazine advertisements
  - in newspaper advertisements
  - on food packaging and labels

Instruct students to cut out one label or ad and bring the connotation of their label or ad to class.

Conclude by discussing how we can become better consumers if we understand the methods of advertising.

RESOURCES & MATERIALS

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Dictionaries

Magazines
Scissors

Product claims:
- Pictures of star athletes on cereal boxes implies that consumers will be like the athletes if they eat these cereals. This implication has nothing to do with the nutritive value of the product.
- The statement, *'made with real fruit juice,'* written on labels of packaged drinks gives misleading nutritive value of the product. The drinks usually contain only two percent to ten percent real fruit juice.
- The word *'lite'* on labels is a general term which might indicate weight, calories, or color.
- The statement *'98 percent fat free'* implies that the product has almost no fat in it, but 40 to 50 percent of its calories may come from fat.

TEACHER TIP

Invite an advertising agency artist or writer to class to discuss tactics used on this subject in their line of work.

ESSENTIAL ELEMENT

Language arts. Reading. Comprehension skills to gain meaning from whatever is read. The student shall be provided opportunities to perceive cause and effect relationships; distinguish between and evaluate fact and nonfact; identify and evaluate author's point of view, purpose, and opinions; and predict probable future actions or outcomes.

Language Arts **Grade 8**

8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify nutrients, their sources, and their functions.

ASSESSMENT CRITERIA

- Evaluate a set of symptoms to determine what vitamin is lacking in a person's diet.
- Design a diet that would improve the health of this individual.

ACTIVITIES & STRATEGIES

Discuss the following information about vitamins in the diet:

- ***Vitamins*** are organic compounds necessary in the diet in small amounts for normal growth, maintenance of health, and reproduction.
- Vitamins help the body convert carbohydrates and fat into energy, and assist in the formation of bones and tissues.
- Vitamins must be provided in the diet because the body cannot produce them or provide the necessary quantity.
- A diet deficient in one or more vitamins will result in a variety of symptoms and diseases.
- School food service provides foods rich in vitamins.

Review the handout, "Vitamin Sources and Functions."

Divide the class into seven groups. Distribute one case history index card to each group. Each group will take on the role of a disease specialist who will evaluate the patient's symptoms listed below, and determine which vitamin is lacking in the patient's diet.

Ask the *specialists* to make a list of the functions and sources of the deficient vitamin and design a diet which would improve the health of the patient. Be sure to include school food service meals in this diet. A spokesperson from each group should present the group's findings to the class.

Case histories:

1. Pam cannot see well at night, and her eyes are sensitive to light.
2. Pat has cracking skin around his mouth, eyes, and nose.
3. Dennis' gums bleed when he brushes his teeth. He has bruises, painful joints, scaly skin, and weakness.
4. Susan is anxious, has digestive problems, and rough skin.
5. Tony's cuts on his skin do not seem to heal well.
6. Jesse is tired, has no appetite, and has digestive problems.
7. Jasmine has broken several bones, has bowed legs, and her doctor says that her bones are weak.

RESOURCES & MATERIALS

Handout: "Vitamin Sources and Functions"

School breakfast and lunch menus

Index cards with one case history per card

ANSWER KEY

1. **Vitamin A**
2. **Riboflavin (Vitamin B_2)**
3. **Ascorbic Acid (Vitamin C)**
4. **Niacin (Vitamin B_3)**
5. **Vitamin K**
6. **Thiamin (Vitamin B_1)**
7. **Vitamin D**

In advance, invite the cafeteria manager to tell the class about the vitamins that are in the school breakfasts and lunches.

ESSENTIAL ELEMENTS

Language arts. Reading improvement. Comprehension skills to gain meaning from whatever is read. The student shall be provided opportunities to analyze information and make judgments on the basis of information given.

Language arts. Speech. Interpersonal and group communication. The student shall be provided opportunities to participate in a variety of kinds of formal and informal group discussions.

Vitamin Sources and Functions

NUTRIENTS	FUNCTIONS	FOOD SOURCES	POOR NUTRITION INDICATORS	
			Too Little	Too Much
Vitamin A	• Promotes growth, & healthy skin & hair. • Helps eyes adjust to dark. • Helps body resist infection.	• dark, green, leafy vegetables like collard greens & spinach • deep yellow vegetables like carrots, pumpkins, & winter squash • deep yellow fruits like cantaloupe, papayas, & apricots • egg yolk, milk, & liver • butter & fortified margarine	• ***night blindness*** (cannot see in dim light) • light-sensitive eyes • low resistance to disease	• nausea, headaches, crankiness • possible skin yellowing • stunted growth with extreme overdose
Thiamin (Vitamin B_1)	• Promotes good appetite. • Maintains health of nerves. • Helps in production of energy.	• enriched & whole-grain cereals and breads • pork, organ meats, & other meats • dried legumes	• fatigue, anxiety, digestive problems • ***Beriberi*** (paralysis, cardiovascular problems, nerve & muscle disorders)	
Riboflavin (Vitamin B_2)	• Helps resistance to infection & energy production. • Keeps area around mouth & eyes healthy.	• milk, cheese, yogurt, eggs, organ meats, meat, poultry, fish, enriched breads, & cereals	• dry, cracked skin around eyes, nose, mouth, tongue, & lips	
Ascorbic Acid (Vitamin C)	• Increases resistance to infection. • Maintains health of teeth & gums. • Helps keep blood vessels firm. • Helps wounds heal & helps make collagen which holds cells together.	• citrus fruit, cantaloupe, tomatoes, green peppers, strawberries, potatoes, greens, broccoli, raw cabbage	• bleeding gums, bruises • ***Scurvy*** (painful joints, scaly skin, weakness)	• possible diarrhea & kidney damage
Vitamin D	• Helps build strong teeth & bones.	• cod-liver oil • milk • sunlight	• adults—soft bones • children—***Rickets*** (weak bones, knocked-knees, bowed legs)	• damage to liver & kidney • nausea • weight loss • deformed bones
Vitamin K	• Helps blood clot.	• green, leafy vegetables • organ meats • egg yolk • manufactured by the body	• hemorrhaging, blood unable to clot	• toxicity
Niacin (Vitamin B_3)	• Helps production of energy. • Helps maintenance of healthy nervous system.	• whole-grain, enriched cereals and breads	• digestive problems, anxiety, • ***Pellagra*** (digestive & mental problems; rough skin)	

Language Arts **Grade 8**

8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Discuss the Dietary Guidelines for Americans.

ASSESSMENT CRITERIA

Compose a dietary guideline for teenagers and compare it with the Dietary Guidelines for Americans.

ACTIVITIES & STRATEGIES

Ask students to list seven guidelines that they think should be followed to improve the average teen's nutritional health.

Compare this list with the transparency, "Appendix F: Dietary Guidelines for Americans." What are some similarities and some differences?

Discuss the fact that The Dietary Guidelines have changed over the years, from offering Americans a way of improving their health through good nutrition, to focusing on preventing disease through nutrition. Ask the students why they think this has occurred.

Point out these changes in the American diet:

- The average American eats too much fat, sugar, and sodium.
- The average American eats too little fiber.
- Forty percent of Americans are overweight.

Note that the increase in health problems like high blood pressure, heart disease, adult-onset diabetes, and cancer have been linked to poor food choices.

Divide the class into seven groups. Assign each group one of the guidelines and compose an article that could be printed in the school newspaper. Ask them to expound on the guideline by making suggestions on how teens might change their eating habits. They might list healthful foods, discuss risks of not following the guideline, and present the guideline in a light that would persuade teens to follow it.

Allow each group time to share their article with the class.

RESOURCES & MATERIALS

Transparency: "Appendix F: Dietary Guidelines for Americans"

ESSENTIAL ELEMENT

Language arts. Writing concepts and skills. The student shall be provided opportunities to write for a variety of purposes and audiences.

Language Arts **Grade 8**

8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Examine ways to reduce intake of cholesterol.

ASSESSMENT CRITERIA

- Identify foods that have high contents of fat and cholesterol.
- Synthesize information of ways to trim fat from their diets.

ACTIVITIES & STRATEGIES

Solicit definitions from students for:
- ***fat***
- ***saturated fat***
- ***unsaturated fat***
- ***cholesterol***

Write the definitions from "Appendix G: Glossary of Terms" on the chalkboard, and discuss similarities and differences.

Emphasize that foods that come from animal sources contain cholesterol. Ask the class to give some examples of foods that contain cholesterol, and list them on the chalkboard. Be sure they include:
- meats
- shellfish
- dairy products
- egg yolks (The white contains no fat or cholesterol.)

Point out that there are ways to eat a nutritious diet and still have your favorite foods.

Distribute and review the worksheet, "Invent-Your-Own-Pizza Contest."

Discuss the handout or transparency, "Suggestions for Lowering Fat Intake." Suggest that the students may want to apply some of these suggestions when they invent their pizzas.

Divide the class into groups of three or four students to invent a pizza. Instruct each group to elect a student to present his or her group's invention to the class. Allow time for the groups to create their pizzas.

After all of the groups present their pizzas to the class, allow students to vote on a winner. Ask the class to describe the things that they like about each pizza invention.

RESOURCES & MATERIALS

Worksheet: "Invent-Your-Own-Pizza Contest"

Handout or transparency: "Suggestions for Lowering Daily Fat Intake"

"Appendix G: Glossary of Terms"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

In advance, ask the cafeteria manager if the winning pizza could be served as part of one day's school lunch menu.

ESSENTIAL ELEMENT

Language arts. Writing concepts and skills. The student shall be provided opportunities to use the composing process to plan and generate writing; write for a variety of purposes and audiences; demonstrate clear and logical thinking in support and development of a central idea; evaluate the content and organization of one's writing as well as that of others and use formal and informal language appropriately.

NAME ______________________________ **DATE** ____________________

Win the prize of a healthy lifetime!

Enter the

Invent–Your–Own–Pizza contest!!

- *Create an original pizza by changing the sausage pizza recipe listed below so that it has less fat. You may change the ingredients, the procedure, or the cooking method.*
- *Use the suggestion list presented by your teacher to make wise changes in your creation.*
- *Pizzas will be judged on:*
  - *creativity*
  - *use of lower fat ingredients*
  - *cooking procedures*
  - *appeal*
- *Underline lower fat ingredients and recipe changes. Good Luck!*

Sausage Pizza

1 12-inch unbaked pizza crust
1/4 cup chopped onion
1 tablespoon butter or margarine
8-ounce can tomato sauce
1 teaspoon oregano leaves
1/8 teaspoon pepper
6 ounces sausage
1/3 cup sliced Canadian bacon
6 ounces shredded whole-milk mozzarella cheese

Preheat oven to 400 degrees.
Place pizza crust on a pizza plate greased with margarine.
Saute onion in melted butter or margarine in a frypan. Remove from heat.
Mix in tomato sauce, oregano, and pepper.
Spread over pizza crust.
Brown sausage in a frypan.
Arrange cooked sausage, Canadian bacon, and cheese over tomato sauce on crust.

Bake for 20 minutes or until crust browns slightly. Serves 4-6.

- *Write your creative recipe in the space below.*

Suggestions for lowering daily fat intake:

- **Read labels**. Select foods that are low in fat.
- **If it is fried, you can bet it is fatty!** Eat it baked, broiled, or steamed. Eat a baked potato instead of french fries or potato chips.
- Use or **drink low-fat** versions of milk, cheese, and yogurt.
- **Think substitutes.** Eat nonfat yogurt or a bunch of grapes instead of ice cream or a brownie. Many desserts have high amounts of fat because they are made with butter, whole milk, and oil.
- **Think lean.** Choose lean meat, fish, poultry, and dry beans and peas as protein sources. Sausage, bacon, and heavily marbled beef have more fat.
- **If you see the fat on meat, trim it off.**
- Use a cooking utensil that does not require grease for cooking.
- **Remove the skin from poultry before cooking.**
- **Go easy on the empty-calorie foods.** These include gravies, butter, margarine, mayonnaise, salad dressing, and oil.
- **Use herbs, spices, lemon, or salsa for seasoning** on meats and vegetables.
- **Skim the fat.** Chill soup, broth, or meats after cooking, then spoon off the hardened fat collected on top before reheating to serve.

Language Arts **Grade 8**

8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Explain the role of nutrition and physical fitness in maintaining good health.

ASSESSMENT CRITERIA

Create a composition about one of the six basic nutrients.

ACTIVITIES & STRATEGIES

Define the following terms with the students:
- ***nutrients***
- ***malnutrition***
- ***deficiency***

Discuss the information listed in the next column with the students.

Divide the students into six groups. Assign one of the six nutrients to each group. Instruct the groups of students to research the nutrient, and write a one-page paper describing the nutrient's:
- function
- sources
- deficiency symptoms
- effects of consuming too much of a nutrient

Provide time for each group to present their findings to the class.

Ask the students the following question:
Due to your increased level of nutrition knowledge, what are some healthy eating habits that you can apply to your life that will have long-term benefits? Student answers will vary.

RESOURCES & MATERIALS

Library resources

Information about wellness:
- In order to maintain good health, the body needs oxygen, water, exercise, sleep, and nutrients.
- Nutrients are essential for good health because they are substances that provide nourishment for the body.
- The six basic nutrient groups are proteins, carbohydrates, fats, vitamins, minerals, and water.
- Three nutrients, proteins, carbohydrates, and fats, supply energy to the body, but all six nutrients help build cells and tissues.
- Nutrients also regulate body functions such as breathing and temperature.
- No one food contains all of the nutrients necessary for the body to function effectively; therefore, a balanced diet that incorporates appropriate amounts of the six nutrients is necessary.
- Individuals should choose foods with high nutrient density rather than foods with empty calories.
- Foods that are ***nutrient dense*** are excellent sources of essential nutrients compared to its calories. Foods with ***empty calories*** refer to foods that provide calories or energy, but little or no nutritive value.

ESSENTIAL ELEMENTS

Language arts. Writing concepts and skills. The student shall be provided opportunities to write for a variety of purposes and audiences.
Language arts. Speaking and listening skills. The student shall be provided opportunities to present information in a variety of oral situations.

LESSON OBJECTIVE

Investigate new developments in food trends.

ASSESSMENT CRITERIA

Define terms that describe food industry trends.

Language Arts **Grade 8**

8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Discuss the following information about developments in food production:

- The process by which food products arrive at the dinner table today is very different than the process used fifty years ago.
- The food industry has been greatly influenced by economical trends, technological developments, and lifestyle changes.
- Foods, like clothing, go in and out of style. People are very health conscious today, and the trend has moved away from eating heavy meat and potato meals toward eating low-calorie, low-fat meals.
- Technology has greatly influenced the ability to make food products more nutritious and to determine the nutrient content of foods.
- Research has increased in the food science industry. Basic chemical and physical principles have become the foundations of food science and nutrition and the nation's food supply.
- Certain professionals have specialized in the development of new food items for the average consumer as well as for the commercial food service industry.

Distribute and review the worksheet, "New Trends." Instruct the students to complete the worksheet.

After completion, review the definitions and the answers on the worksheet.

Extension:
Investigate and discuss:
- Environmental agriculture
- Sustainable agriculture

RESOURCES & MATERIALS

Worksheet: "New Trends"

Food and Fiber Curriculum, Texas Agricultural Extension Service

Ag In the Classroom Curriculum, Texas Farm Bureau

Dictionaries
Encyclopedias
Agriculture reference books

ANSWER KEY

1. **agribusiness**
2. **genetic engineering**
3. **recombinant DNA**
4. **cell fusion**
5. **hybrids**
6. **polyculture**
7. **aquaculture**
8. **hydroponically**

ESSENTIAL ELEMENT

Language arts. Reading. Word attack skills to decode written language. The student shall be provided opportunities to use advanced dictionaries.

NAME ______________________________ **DATE** ______________

New Trends

On a separate sheet of paper, define the terms listed below. Use this information to match the appropriate word to the blank in the text below.

agribusiness
aquaculture
cell fusion
hybrids
hydroponically
polyculture
recombinant DNA
genetic engineering

It is estimated that only 2 percent of the population of the United States are farmers. Only a small percentage of the farms are family-operated. Food production has become a large scale business. Technological advances have made major impacts in the farming industry with new methods of irrigation, breeding of plants, and test-tube breeding of cows. Technology is expensive. Few family farm owners can afford the high costs of technology. Food production is known less as agriculture and more as 1)____________________. It allows a higher percentage of quality products to be produced and creates higher yields with a more efficient use of natural and human resources.

Genetic manipulation of cells is now known as 2)______________________. It is probably the oldest form of plant breeding. Early farmers saved the seeds from their best plants and used them for replanting the following year. The plants that produced the largest yield and had the greatest tolerance to environmental conditions were used. The general concept of genetic engineering has remained the same, but the selection process has become more and more sophisticated.

There are two methods of genetic manipulation used today. 3)____________________ refers to the process of taking a gene or protein from one source and adding to the DNA (genetic makeup) of another source to produce a new microorganism or to modify an existing one. 4)______________________ refers to mixing two cells from different species to combine their genetic material and to create a new organism. 5)______________________ are new strains of plants created through crossbreeding. They are bred to produce particular strengths such as resistance to disease and drought. 6)______________________ refers to growing a variety of crops, and is a concept that many experts see for the future of the agribusiness industry. An example of this would include combining fruits and vegetables. A whole new variety of foods can be provided through this process such as broccoflower.

The consumption of fish in the United States has increased approximately 30 percent since 1970. The number of fish available from the oceans has decreased. The fish demand has encouraged the development of 7)______________________. This term refers to fish and fish farms primarily but also applies to almost anything that can be raised in water. Some vegetables are grown in water 8)______________________ without the aid of soil.

Almost all catfish and crayfish eaten today are raised on farms. A large percentage of oysters, rainbow trout, mussels, and shrimp are also products of this type of farming. Approximately one-eighth of consumer seafood is produced by the aquaculture industry. Japan and China are currently the largest producers of aquaculture. Their primary products are finfish, shellfish, and seaweed.

Language Arts **Grade 8**

8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Investigate new developments in food trends.

ASSESSMENT CRITERIA

- Identify the functions of the Food and Drug Administration.
- Discuss current food trends and their long-term effects.
- Research food additives and their properties.

ACTIVITIES & STRATEGIES

Identify the Food and Drug Administration (FDA) as the government agency that:

- tests the safety of food additives
- enforces laws on restricting and controlling additives that:
  - mask inferior foods
  - cause harmful effects to the consumer

Ask the students to name any substances which have been banned or had FDA warnings, and give reasons.

- Cyclamates (sugar substitute), in 1969, were banned because of a link to cancer in laboratory animals. Explain the "Delaney Clause" to the 1958 Food Additive Amendment: "... no additive can be used if it causes cancer when fed to animals or people or if it causes cancer in human or animal tests (that are) 'appropriate for the evaluation of the safety of food additives.'"
- Saccharin (sugar substitute), was also linked to cancer in lab animals, but was granted sale in 1979 by Congress as long as a warning was placed on the label.
- Red dye No. 2 (food coloring) was banned.

Discuss students' ideas on the difference that ten years has made in the former Congressional actions (public opinion, industry pressure, risks vs. benefits).

Discuss the current *trend* toward nutrition and fitness.

- It has promoted interest in eating less sugar and fat.
- It has encouraged food scientists to develop sugar and fat substitutes, such as:
  - aspartame - sugar substitute
  - acesulfame potassium - sugar substitute
  - simplesse - fat substitute
  - olestra - fat substitute (still under research)

Divide the class into research groups of three to five students.

- Write the questions found in the resource column on slips of paper.
- Let one student from each group choose a slip of paper.
- Introduce reliable sources of information on food additives.
- Have each group research their topic and present their information to the class.

RESOURCES & MATERIALS

Suggested resource information on additives:

Hughes, C.C. *The Additives Guide.* New York: John Wiley and Sons, 1987

Roberts, H.R. *Food Safety.*, New York: John Wiley and Sons, 1981

Library books, magazines, encyclopedias

Research group guestions:

1. What could be the nutritional effects of increased use of sugar and fat substitutes?
2. Why do people use additives known to cause cancer in laboratory animals? Would you?
3. Which categories of additives do you consider most and least important? Why? (preservatives, nutrients, or color and flavor enhancers)
4. Look up the words fortified and enriched in the dictionary. Why does "Vitamin D fortified" sound better on a food label than "Vitamin D added?"
5. After harvesting, wheat goes through many processing stages. Name two reasons you think additives would be added to bread and cereal products during processing.

TEACHER TIPS

For enrichment, have the students research and write about one of the following:

- **Mustard and pepper share a chemical that is useful in retarding bacterial growth. Explain this natural chemical preservative and its nature.**
- **Obtain food samples of store-bought and homemade bread. Cover the samples, leave them at room temperature, and observe how much time it takes for mold to grow on each. Research calcium propionate and how it extends the *shelf life* of supermarket foods.**

ESSENTIAL ELEMENT

Language arts. Writing concepts and skills. The student shall be provided opportunities to use the composing process to plan and generate writing. Speaking and listening skills. The student shall be provided opportunities to participate in group discussion and present information in a variety of oral situations.

Mathematics **Grade 7**

7

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify nutrients, their sources, and their functions.

ASSESSMENT CRITERIA

Recognize the importance of water in body functions.

ACTIVITIES & STRATEGIES

Discuss the following facts about water with the students:

- The body needs water; 55 to 60 percent of body weight is made up of water.
- Water performs the following functions in the body:
  - transports nutrients to body cells
  - lubricates joints
  - regulates body temperature (perspiration)
  - rids the body of waste (excretion)
  - aids in digestion
- Water participates in many chemical reactions in the body.
- Water acts as a shock absorber inside the eyes, spinal cord, and around the fetus in the womb.
- The thirst mechanism helps to prevent dehydration. Dehydration can lead to death.
- The body can survive only a few days without water.

Brainstorm with the students about sources of water found in the diet. (Soups, beverages, fruits, and vegetables contain the most water, but almost all foods contain some water.)

Provide students with the list of information entitled "Water Content Chart," found in the opposite column by using a transparency or the chalkboard.

Distribute and review the worksheet, "Water Sources In Our Diet." Instruct the students to use the Water Content Chart to complete the worksheet.

You may want to review fractions and percents before students begin the worksheet. After completion, review the answers with the class.

RESOURCES & MATERIALS

Worksheet: "Water Sources In Our Diet"

Water Content Chart

Food	*Percent water by weight*
Lettuce	96
Watermelon	93
Asparagus	92
Soft drinks, soups	88-92
Whole milk	87
Orange	86
Potato	80
Cottage cheese	79
Avocados, bananas, sweet potatoes	75
Eggs	74
Chicken	63
Beef	62
Tuna (drained)	60
Cheddar cheese	37
Bread	36
Butter	20
Honey	17
Dry gelatin	13
Dry beans	10
Crackers, cereals, nuts	2-4
White sugar	0.5

ANSWER KEY

1.	**tuna**	**9.**	**potato**	
2.	**banana**	**10.**	**white sugar**	
3.	**butter**	**11.**	**cheddar cheese**	**37%**
4.	**watermelon**	**12.**	**honey**	**17%**
5.	**bread**	**13.**	**whole milk**	**87%**
6.	**egg**	**14.**	**asparagus**	**92%**
7.	**dry beans**	**15.**	**orange**	**86%**
8.	**lettuce**			

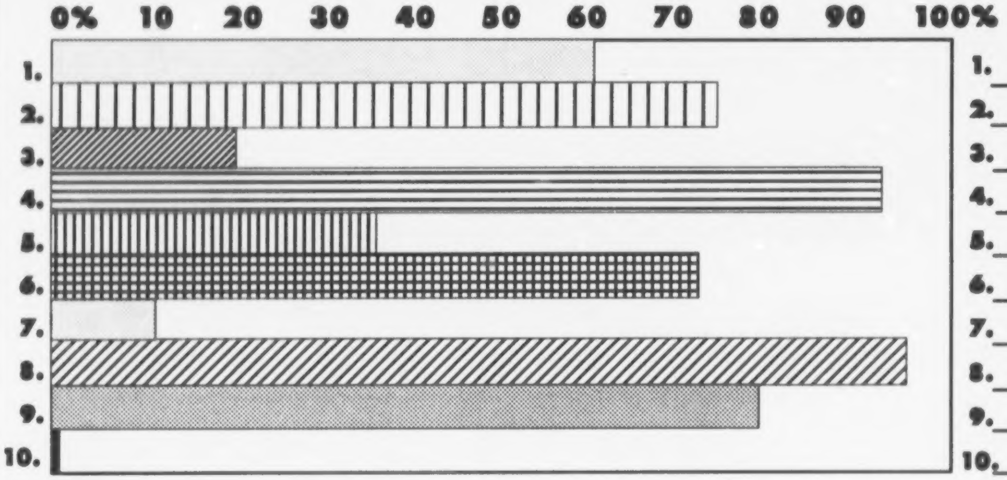
ESSENTIAL ELEMENT

Mathematics. The use of probability and statistics to collect and interpret data. The student shall be provided opportunities to interpret and construct charts and graphs.

NAME ______________________________ DATE ________________

Water Sources In Our Diet

Instructions: Find the food represented by each bar on the following bar graph. The foods are listed on the Water Content Chart which has been provided. Additional clues to the foods are found beneath the graph.

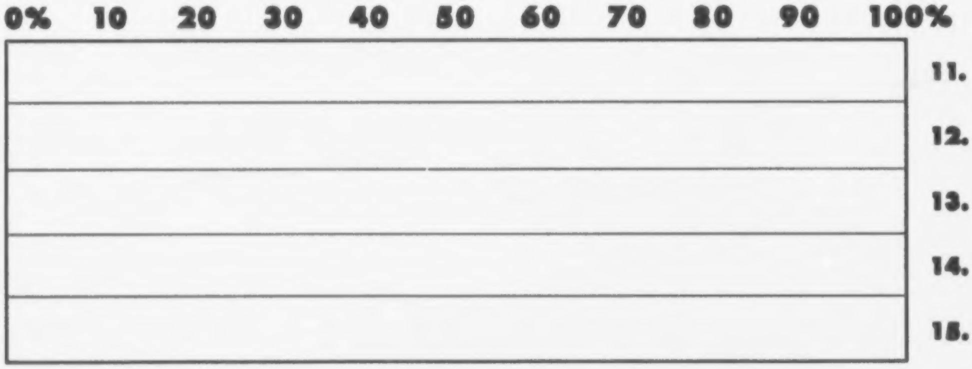


1. ____________
2. ____________
3. ____________
4. ____________
5. ____________
6. ____________
7. ____________
8. ____________
9. ____________
10. ____________

Clues

1. *This food is harvested from the ocean and is an excellent source of protein.*
2. *Three-fourths of this yellow fruit's weight is water.*
3. *One-fifth of this dairy product is water.*
4. *A summertime refreshing treat.*
5. *You knead this for toast.*
6. *This is oval-shaped.*
7. *One-tenth of these are water.*
8. *This is a major ingredient of tossed salad.*
9. *Four-fifths of this Idaho farm product is water.*
10. *This is a sweet which comes from beets and cane.*

11. - 15. Construct a bar graph that represents the foods listed to the right of the empty graph.



11. Cheddar cheese

12. Honey

13. Whole milk

14. Asparagus

15. Orange

Mathematics **Grade 7**

7

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Compare the nutritive value of foods.
- Discuss the Dietary Guidelines for Americans.

ASSESSMENT CRITERIA

Compare and contrast the nutritional contents of three types of chicken.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:

- The statement, "you are what you eat," is true from the standpoint of nutrition and good health.
- Nutrients found in food are essential for overall health and well-being. Although nutrients do not cure an illness as medications do, the well-nourished body is better prepared to fight disease and stay healthy.
- *Nutrition and Your Health: Dietary Guidelines for Americans* are the guidelines issued by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services concerning nutrition, good health, and the prevention of disease.

Review and discuss the transparency, "Appendix F: Dietary Guidelines for Americans," with the students.

Distribute and review the worksheet, "Chicken Supreme," with the students, and allow time for completion.

Discuss how each type of chicken can fit into an overall plan of healthy eating.

RESOURCES & MATERIALS

Worksheet: "Chicken Supreme"

Transparency: "Appendix F: Dietary Guidelines for Americans"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

ANSWER KEY

1. **Roasted chicken without skin**
2. **Roasted chicken without skin**
3. **Roasted chicken without skin**
4. **Percentage of calories from fat:**
    - **Roasted chicken without skin—19 percent**
    - **Chicken hot dog—68 percent**
    - **Fried chicken with skin—43 percent**

ESSENTIAL ELEMENT

Mathematics. The use of probability and statistics to collect and interpret data. The student shall be provided opportunities to interpret and construct charts and graphs.

NAME ______________________________ **DATE** ________________

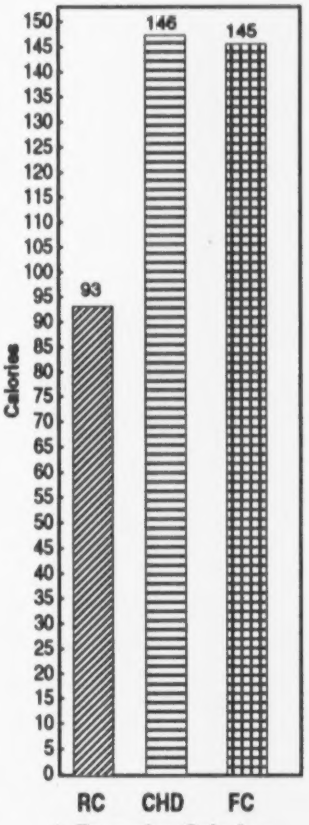
Chicken Supreme

Complete the bar charts below with the information given concerning the nutrient content of two ounce portions of these three types of chicken.

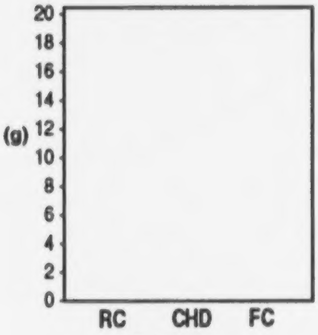
RC **- roasted chicken without skin**
Calories 93
Protein 17 g (grams)
Carbohydrate 0 g
Cholesterol 47 mg (milligrams)
Fat 2 g

CHD **- chicken hot dog**
Calories 146
Protein 7 g
Carbohydrate 4 g
Cholesterol 56 mg
Fat 11 g

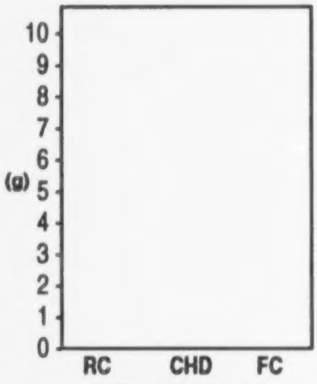
FC **- fried chicken with skin**
Calories 145
Protein 14 g
Carbohydrate 5 g
Cholesterol 48 mg
Fat 7 g



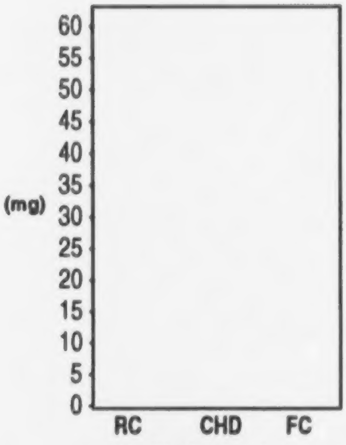
1. Example: Calories



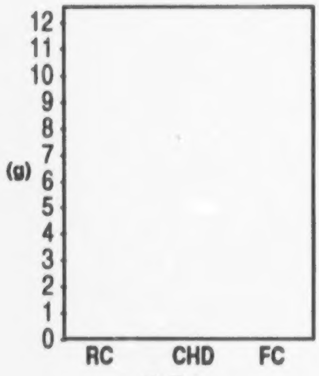
2. Protein



3. Carbohydrate



4. Cholesterol



5. Fat

Interpret your graphs to answer the following questions.

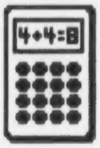
1. Which type of chicken offers the most protein for the least amount of calories?

2. To choose a diet low in fat and cholesterol, one would include which type of chicken in the diet?

3. Choose the most healthful type of chicken from the three types presented.

4. Calculate the percentage of calories from fat. (There are 9 calories in one gram of fat.)

Mathematics **Grade 7**



7

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Make wise food choices as part of self-responsibility for health and wellness.

ASSESSMENT CRITERIA

- Explain the importance of reducing daily fat intake.
- Graph the fat content of selected foods.

ACTIVITIES & STRATEGIES

Lead a class discussion about reducing the fat content of individual daily diets.

- Three recommendations about eating for health and wellness from the American Cancer Society include:
  - Eat less fat and fewer fatty foods.
  - Eat more fruits and vegetables.
  - Eat more whole-grain foods.
- Current research indicates that diets low in fat and high in fiber like fruits, vegetables, and whole grains are associated with lower risks of certain cancers.
- Studies show that a high-fat intake promotes the development of certain cancers.
- The average American eats the equivalent of about 24 teaspoons of fat a day—the amount of fat contained in a stick of butter. Eating too much fat may increase the chances of developing cancer of the breast, colon, and prostate.
- No more than 30 percent of total calories should come from fat.
- Not everything we eat promotes cancer. Some foods protect against cancer and other foods help to promote it.
- To lower the risk of developing cancer, we should eat more of the "protectors" and less of the cancer "promoters."

Discuss the *Protectors* (foods high in fiber and/or low in fat) and the *Promoters* (foods high in fat and low in fiber) listed on the worksheet, "Graphing the Fats." Emphasize to students that practicing a high-fat diet everyday, not just an occasional high-fat food, can contribute to health problems.

Adapted from:
"Changing the Course: Intermediate Curriculum," American Cancer Society, pp. 41 - 47

RESOURCES & MATERIALS

Worksheet: "Graphing the Fats"

"Changing the Course: Intermediate Curriculum," American Cancer Society

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ESSENTIAL ELEMENT

Mathematics. The use of probability and statistics to collect and interpret data. The student shall be provided opportunities to interpret and construct charts and graphs.

NAME ______________________________ **DATE** ________________

Graphing the Fats

Protectors

Eat more of these foods which are high in fiber and/or low in fat:

- *Whole grains*
- *Vegetables*
- *Fruits*
- *Dried beans and peas*
- *Fish*
- *Chicken and turkey without skin*
- *Lean meat*
- *Low-fat milk and yogurt*
- *Low-fat cheeses*

Promoters

Eat less of these foods which are high in fat and low in fiber:

- *Meats with heavy marbling or streaks of fat*
- *Chicken and turkey with skin*
- *Cold cuts*
- *Fried foods*
- *Fats added to foods: butter, margarine, vegetable oils, salad dressing, mayonnaise*
- *Bakery products*
- *High-fat dairy foods such as high-fat cheeses, ice cream, and whole milk*
- *Salt-cured, smoked, and barbecued foods*

1. Make a bar graph of the following foods on the chart below, beginning with the foods with the least amount of fat.

Potato chips, 1 oz.—10 grams
Bologna sandwich—18 grams
Whole wheat English muffin—2 grams
Glazed doughnut—11.3 grams
Chocolate ice cream, 1/2 cup—17 grams

Butter, 1 T.—12.2 grams
Broccoli, steamed—0 grams
Turkey breast sandwich—6 grams
Baked fish—4 grams
Fresh peach—0.1 grams

2. What recommendations can you make for reducing the amount of fat in your diet?

ESR IV

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Explain the role of nutrition and physical fitness in maintaining good health.

ASSESSMENT CRITERIA

Explain how food choices affect physical fitness and appearance.

ACTIVITIES & STRATEGIES

Stress the following points:

- Physical fitness is affected by exercise, stress, sleep, mental attitude, and diet.
- Lack of exercise and consuming more calories than are used by the body can lead to being overweight and obesity. Obesity is excessive body fat; generally considered to be excessive when a person is overweight by 20 percent or more.
- Obesity is associated with high blood pressure, heart disease, and adult-onset diabetes. It can also lead to a low self-image.
- Nutrition is an important factor in staying physically fit.
  - Choose a variety of foods.
  - The majority of calories should come from complex carbohydrates. (A calorie is a unit of energy.)
  - Limit fat, salt, and sugar.

Distribute and review the worksheet, "How Many Calories?" with the students. After completion, review and discuss the answers with the class.

Summarize how obesity affects our health. Stress that a weight-loss diet should promote a loss of no more than two pounds per week. If a person loses more than two pounds per week, he or she is losing some muscle tissue and water.

RESOURCES & MATERIALS

Worksheet: "How Many Calories?"

"Instructor's Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

ANSWER KEY

1. **11,000 calories**
2. **less, 400 calories**
3. **56 minutes**
4. **19,600 calories**
5. **175 days**
6. **1,120 calories**
7. **780 calories**

ESSENTIAL ELEMENT

Mathematics. Experience in solving problems by selecting and matching strategies to given situations. The student shall be provided opportunities to use basic operations.

NAME ________________________________ DATE ________________

How Many Calories?

1. Vicky, who is 13 years old, has a recommended daily calorie intake of 2,200 calories. How many calories would she consume in five days?

2. Vicky ate food totalling 6,200 calories during a three day period. Did she eat more or less than her recommended daily intake? By how many calories?

3. A candy bar contains 280 calories. A fourteen minute swim will burn 280 calories. Jesse ate four candy bars. How many minutes must he swim to burn off the calories?

4. Ronnie is sixteen years old. His recommended calorie intake is 2,800 per day. How many calories should he have in 7 days?

5. If Jackie reduces her calorie intake by 500 calories a day, she can lose five pounds in 35 days. How many days will it take to lose 25 pounds?

6. If you eat the following, how many calories will you consume? cheeseburger—450, soft drink—150, pear—100, 2 oatmeal-raisin cookies—120, milk shake—300

7. An individual-sized bag of potato chips has 195 calories. How many calories are there in four bags?

LESSON OBJECTIVE

Analyze nutrition information on food labels.

ASSESSMENT CRITERIA

Compare labels for amounts of fat in selected food items.

ACTIVITIES & STRATEGIES

Discuss the following information regarding fat in the diet:
- Most Americans consume too much fat.
- A diet high in fat can lead to obesity and certain types of cancer.
- High-fat diets can contribute to heart attacks and strokes.
- The amount of fat consumed over a period of time should be no more than 30 percent of the total calories taken into the diet.
- Nutrition information found on the food item label provides information regarding amounts of certain nutrients, including fat.
- The amount of fat in a food item is represented in grams in the nutrition information on the label.
- One way to reduce intake of high amounts of fat is to read the label of prepared foods and choose low-fat items.
- Calculating the percentage of fat that a food item contains will help consumers have the necessary information for controlling their fat intake.

Distribute the worksheet, "Label Fat."

Demonstrate the calculation of the sample question for the class. Allow time for the students to complete the rest of the worksheet.

Ask students to share and discuss their answers.

RESOURCES & MATERIALS

Worksheet: "Label Fat"

"Changing the Course: Intermediate Curriculum," American Cancer Society

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

ANSWER KEY

Label A. 54%
Label B. 47.8%
Label C. 1%
Label D. 30%

1. **37%**
2. **There would be twice as many fat calories.**
   Chips: 90.1
   Crackers: 44.1
   Difference 46.8 calories

ESSENTIAL ELEMENT

Mathematics. Operations and computation. Use of manipulatives to develop the concepts of basic operations on numbers and to apply these concepts to the computational algorithms. The student shall be provided opportunities to estimate solutions to problems using decimals and percent.

NAME ______________________________ **DATE** ______________

Label Fat

A

Cheese Crackers
Nutrition Information
Serving Size ....5 pieces
Per Serving Calories 81
Protein ....1.4 g (grams)
Carbohydrate ....7.8 g
Fat ....4.9 g

B

Vanilla Ice Cream
Nutrition Information
Serving Size ....1 cup
Per Serving Calories 269
Protein ....4.8 g
Carbohydrate ....31.7 g
Fat ....14.3 g

C

Fruit Cocktail
Nutrition Information
Serving Size ....1/2 cup
Per Serving Calories 93
Protein ....5 g
Carbohydrates ....24.2 g
Fat ....0.1 g

D

Chicken Noodle Soup
Nutrition Information
Serving Size ....9 ounces
Per Serving Calories 120
Protein ....3 g
Carbohydrate ....10 g
Fat ....4 g

Instructions: Use the following calculation to find the percentage of calories that comes from fat in these food items.

Step 1. From the label, find the number of grams of fat in one serving.

Step 2. Multiply this number by nine because each gram of fat contains nine calories. This number will give the total number of calories that come from fat in one serving.

Step 3. To find the percentage of calories that comes from fat: Divide the number of calories from fat by the number of calories in one serving and multiply that number by 100.

Step 4. Write the percentage of calories from fat in this column.

Work the calculations in the spaces provided:

	Step 1	Step 2	Step 3	Step 4
Label ***A***				
Label ***B***				
Label ***C***				
Label ***D***				

1. Find the percentage of calories from fat for this meal.
2. If chips (10.1 grams of fat) were eaten instead of crackers, how would this change the fat calories? What would be the difference?

LESSON OBJECTIVE

Compare the nutritive value of foods.

ASSESSMENT CRITERIA

Assess the food value of several products in the milk, cheese, and yogurt food group.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:

- Milk products supply protein, calcium, vitamin A, vitamin D, and the B vitamins.
- Calcium is one of the most important nutrients. It is one of the major minerals and is stored in the bones. It is essential for bone growth and the prevention of bone loss in adulthood.
- Calcium is also necessary for the transmission of nerve impulses and muscle performance such as heartbeat.
- A condition known as ***osteoporosis*** occurs when there has been a calcium deficiency which results in bone density loss over a period of years.
- Some milk products contain high amounts of fat. High-fat diets can be linked to an increased risk for heart disease. A diet low in fat makes it easier to include the variety of foods you need for nutrients without exceeding your calorie needs because fat contains over twice the calories of an equal amount of carbohydrates or protein.
- Milk supplies the body with complete protein. Proteins are needed for growing and forming new tissue; maintaining and repairing tissue; forming enzymes, hormones, and antibodies; providing energy; and regulating bodily processes.
- Adults need two servings from the milk, yogurt, and cheese group. Three servings are needed for women who are pregnant or breast-feeding, children, and teens. Four servings are needed for teens who are pregnant or breast-feeding.
- Milk products differ in their composition, so you must know what amounts of nutrients each milk product contains so that you can make wise choices.

Distribute and review the worksheet, "The Milky Way," with the students.

After completing the worksheet, review and discuss the students' answers.

Mathematics Grade 8

8

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Worksheet: "The Milky Way"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

ANSWER KEY

A.

1. **Cream cheese, cottage cheese, frozen yogurt or ice cream, American cheese, cheddar cheese, Monterey cheese, buttermilk or chocolate milk, whole milk, skim milk, or two-percent low-fat milk, low fat fruit-flavored yogurt, milkshake, low-fat plain yogurt.**
2. **Cream cheese or ice cream, frozen yogurt, American cheese, Monterey cheese or cheddar cheese, buttermilk, or chocolate milk or skim milk or two-percent low-fat milk or whole milk, low-fat fruit-flavored yogurt, milkshake, low-fat plain yogurt, cottage cheese.**
3. **Skim milk, frozen yogurt, buttermilk, low-fat fruit-flavored yogurt, low-fat plain yogurt, cottage cheese or two-percent low-fat milk, ice cream, chocolate milk or milkshake or whole milk, American cheese or cheddar cheese or Monterey cheese, cream cheese.**

B.

1. **buttermilk, low-fat fruit-flavored yogurt, low-fat plain yogurt, skim milk, two-percent milk**
2. **skim milk**
3. **cottage cheese**
4. **cottage cheese, low-fat plain yogurt, low-fat fruit flavored yogurt.**
5. **A milkshake contains a high amount of fat.**

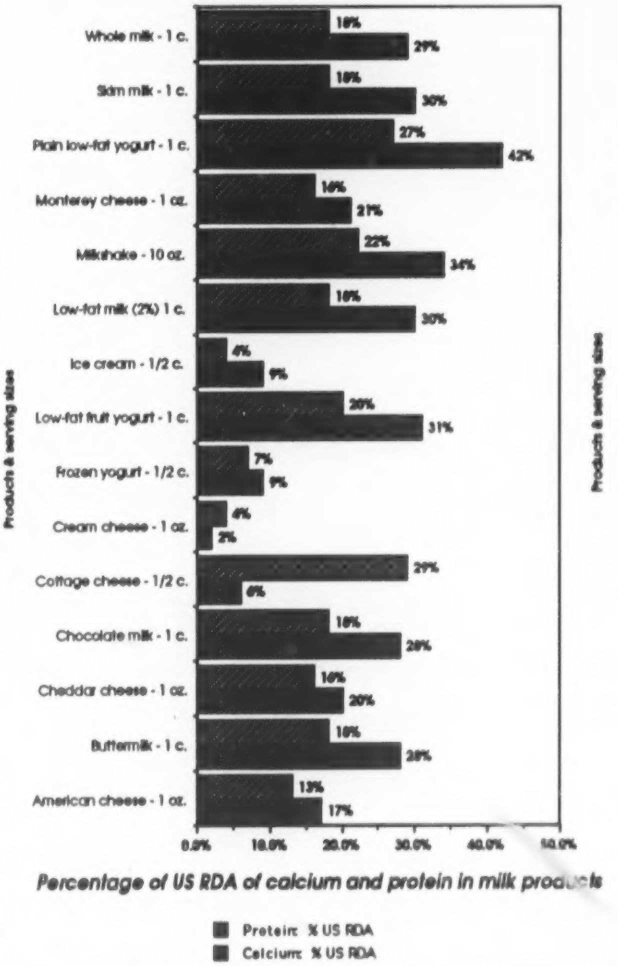
ESSENTIAL ELEMENT

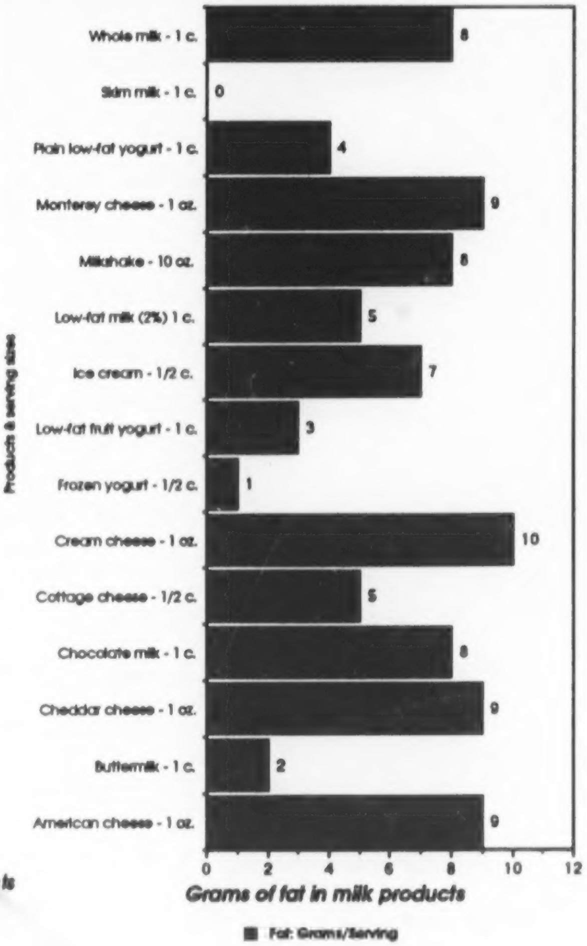
Mathematics. Probability, statistics, and graphing. The use of probability and statistics to collect and interpret data. The student shall be provided opportunities to understand and apply reasoning with proportions in problem situations.

NAME ______________________________ **DATE** ______________

The Milky Way

Instructions: Compare the calcium, protein, and fat content of one serving of the following milk products. Rank the nutrient content from lowest to highest. Draw conclusions.

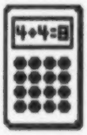




A. *On your own paper, rank the milk products in order, from the food containing the least amount of the stated nutrient to the food containing the most amount of the stated nutrient.*
   1. *Calcium*
   2. *Protein*
   3. *Fat*

B. *Look at the graphs and answer the following questions on notebook paper.*
   1. *Though some of these foods contain a high amount of calcium, they are not the best choice to meet nutritional needs because they contain too much fat. List three foods that provide at least 25 percent of the RDA (Recommended Daily Allowance) for calcium while contributing under eight grams of fat.*
   2. *What type of milk provides the most calcium and the least amount of fat?*
   3. *What type of cheese provides the least amount of fat and the most protein?*
   4. *List 3 foods that provide at least 20 % of the U.S. RDA of protein while providing less than six grams of fat.*
   5. *Why is a milkshake not the most nutritious choice, though it ranks high in calcium and protein?*

Mathematics Grade 8



8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Make wise food choices at snack time.
- Explain the relationship of high intakes of sodium to hypertension.

ASSESSMENT CRITERIA

Calculate the percentage of sodium that food items contribute to a daily diet.

ACTIVITIES & STRATEGIES

Discuss the following information with the students regarding sodium in the diet:

- Sodium and potassium are minerals that function in the body as ***electrolytes***. Electrolytes affect the way fluid is distributed in the body and aid the nervous system in transmitting nerve impulses that control muscle action. Transmission of nerve impulses is very important because it keeps the heart beating in a normal rhythm.
- Sodium helps the kidneys maintain a normal acid/alkali balance in the body.
- There is no minimum daily requirement or required daily allowance for sodium because the American diet shows no evidence of a shortage of this mineral.
- A large portion of the population has elevated sodium levels. Excessive consumption of sodium may result in hypertension. ***Hypertension,*** or high blood pressure, means that the heart must work much harder to pump the blood. High blood pressure may be hereditary, a result of obesity, or a result of too much salt in the diet.
- Health professionals recommend that persons without health problems limit their sodium intake to about two grams, or approximately 2400 milligrams per day.

Distribute and review the worksheet, "Salt Factors," with the students. Allow time to complete the worksheet.

Ask the students to name some positive actions that they can take to lower their sodium intake.

Extension:
Measure two grams of salt so students can observe this small amount of salt.

RESOURCES & MATERIALS

Worksheet: "Salt Factors"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

ANSWER KEY

A. 1. 56%
2. 52%
3. 39%
4. 29%
5. 6%
6. 1%
7. 17%
8. 43%
9. 1%
10. 51%
B. 1. A diet high in sodium may lead to high blood pressure.
2. Choose foods that are low in sodium to balance out high-sodium food choices.
C. Bonus question: approximately 2100 milligrams of sodium in one teaspoon of salt.

ESSENTIAL ELEMENT

Mathematics. Operations and computation. The use of manipulatives to develop the concepts of basic operations on numbers and to apply these concepts to the computational algorithms. The student shall be provided opportunities to estimate and solve application problems involving percent.

NAME ______________________________ **DATE** ______________

SALT FACTORS

Sodium, or salt, is essential because it helps the body maintain normal blood volume and blood pressure. It also helps nerves and muscles function: however, high-sodium diets can be detrimental. About 25 percent of the American population has elevated blood pressure. The risk for heart attack, stroke, and kidney disease is increased by high blood pressure. Once high blood pressure exists, too much sodium in the diet may aggravate high blood pressure; therefore, it is important to reduce dietary sodium. It is recommended that persons without health problems limit their sodium intake to 2400 milligrams per day.

Instructions:

Evaluate the sodium content of the following food items by figuring the percentage they contribute based on a maximum of 2400 milligrams per day. With this figure, you should be able to determine if these food items are wise nutritional choices for persons who are trying to control their sodium intake. The formula for figuring this percentage is:

The amount of sodium in a food item ÷ 2400 milligrams X 100 =

the percent of 2400 mg that this food item provides for a daily diet, rounded to the nearest whole number

A. Figure the percentage of the maximum recommended daily consumption of sodium that the following food items contain:

1. One enchilada contains 1332 milligrams of sodium.
2. One corn dog contains 1252 milligrams of sodium.
3. One dill pickle contains 928 milligrams of sodium.
4. One slice of cheese pizza contains 699 milligrams of sodium.
5. One 12-ounce soda contains 150 milligrams of sodium.
6. One slice of wheat toast contains 33 milligrams of sodium.
7. One ounce of processed cheese contains 406 milligrams of sodium.
8. One bean burrito contains 1030 milligrams of sodium.
9. One medium carrot contains 25 milligrams of sodium.
10. One cheeseburger with a four ounce patty contains 1224 milligrams of sodium.

B. Answer the following questions with the information given:

1. Why is it a good idea to limit consumption of high sodium foods like cheeseburgers?
2. If a food item provides a large percentage of sodium for the diet, what can be done to make sure that sodium intake does not exceed 2400 milligrams in one day?

C. Bonus question:

How many milligrams of sodium does one teaspoon of salt contain if 1/4 teaspoon contains approximately 22 percent of the maximum daily recommended amount of sodium?

Mathematics Grade 8

8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Determine the effects of peer pressure on food choices.
- List strategies for reducing the amount of sugar in the diet.

ASSESSMENT CRITERIA

Calculate equations that help to list ways of reducing sugar consumption.

ACTIVITIES & STRATEGIES

Discuss the following information with the students regarding sugar in the diet:

- For better health, it is suggested that Americans limit their consumption of sugar.
- People with special health concerns should use sugar sparingly.
- Sugar provides calories but little else in the way of nutrients.
- There is a greater risk for tooth decay when high-sugar foods are frequently eaten.
- Many convenience foods contain hidden sugar, though these foods are often not thought of as sweets.
- Food labels have other terms for sugar which include brown sugar, confectioner's sugar, corn sweeteners, syrup, dextrose, granulated sugar, maple sugar, and molasses.

Distribute and review the worksheet, "Secret Sugar Code," with the students.

Allow time for the students to complete the worksheet, then review and discuss their answers.

Additional information:
Dried fruit has a more concentrated form of sugar because of the removal of the water; therefore even though no sugar has been added, it is still high in sugar.

RESOURCES & MATERIALS

Worksheet: "Secret Sugar Code"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

ANSWER KEY

A.

1. 1/4
2. 9.75
3. 4.48
4. 2.53
5. 213.33
6. 68.25
7. 2204
8. 1/2
9. 3.44
10. 24
11. 1.8
12. 1.25
13. 1 1/16
14. 103.95
15. 6.75
16. 19.04
17. 22182.12
18. 3516.09
19. 5.4
20. 5456.6

B.

1. **Select pure fruit juices rather than soft drinks or imitation fruit drinks.**
2. **Choose unsweetened cereals rather than the presweetened varieties. Read the labels for sugar content.**
3. **Eat fruit canned in natural juices rather than in heavy syrups.**
4. **Reduce intake of empty-calorie foods. Empty-calorie foods contain calories, but no nutritional value.**
5. **Select fresh fruit for snacks. The sugar content of dried fruit is much higher by weight.**
6. **Try using the sweet spices—allspice, cardamom, cinnamon, cloves, coriander, ginger, and nutmeg—to replace some of the sugar in recipes.**

ESSENTIAL ELEMENT

Mathematics. Operations and computations. Use of manipulatives to develop the concepts of basic operations on numbers and to apply these concepts to the computational algorithms. The student shall be provided opportunities to add, subtract, multiply, and divide rational numbers in problem situations, and estimate and solve problems involving percent.

NAME ______________________________ **DATE** ________________

Secret Sugar Code

Calculate the following equations, rounding to the nearest hundredth. Substitute the word for the math answer in the phrases below. These will reveal strategies for reducing the amount of sugar in the diet.

A. Equations

1. 3/4 - 1/2 = ________ (fruit)
2. 25% of 39 = ________ (juices)
3. 32% of 14 = ________ (calorie)
4. 43 + 17 = ________ (sugar)
5. 32 is 15% of ________ (rather)
6. 75% of 91 = ________ (snacks)
7. 29 x 76 = ________ (of)
8. 2/3 - 1/6 = ________ (than)
9. 31/9 = ________ (empty)
10. 3/4 of 32 = ________ (nutmeg)
11. 9/5 = ________ (drinks)
12. 79/63 = ________ (value)
13. 7/8 + 3/16 = ________ (to)
14. 79 is 76% of ________ (presweetened)
15. 27/4 = ________ (the)
16. 17% of 112 = ________ (or)
17. 23476.09 - 1293.97 = ________ (unsweetened)
18. 7774.30 - 4258.21 = ________ (spices)
19. 1/5 of 27 = ________ (cinnamon)
20. 7934.96 - 2478.36 = ________ (in)

B. Rewrite the phrases.

1. Select pure (1/4) (9.75) (213.33) (1/2) soft (1.8) (19.04) imitation (1/4) (1.8).

2. Choose (22182.12) cereals (213.33) (1/2) (6.75) (103.95) varieties.
Learn (1 1/16) read (6.75) labels for (2.53) content.

3. Eat (1/4) canned (5456.6) natural (9.75) (213.33) (1/2) (5456.6) heavy syrups.

4. Reduce intake (2204) (3.44) (4.48) foods. (3.44) (4.48) foods contain calories but no nutritional (1.25) such as soft (1.8).

5. Select fresh (1/4) for (68.25). (6.75) (2.53) content (2204) dried (1/4) is much higher by weight.

6. Try using (6.75) sweet (3516.09)—allspice, cardamom, (5.4), cloves, coriander, ginger, and (24)—(1 1/16) replace some (2204) (6.75) (2.53) (5456.6) recipes.

Mathematics Grade 8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Discuss wise consumer food-buying skills.
- Explore the influence of food advertising and the media on food habits.

ASSESSMENT CRITERIA

Develop a grocery list that reflects wise consumer buying skills.

ACTIVITIES & STRATEGIES

Smart shopping can help stretch food dollars. Discuss the following food-buying skills:

- Use coupons when the items will be used in the household. Coupons sometimes do not yield the lowest prices when compared with store brands or generic brands, so check prices.
- Shop when grocery stores are having sales.
- Try to shop infrequently.
- Shop at discount grocery stores or supermarkets. Only shop in convenience stores when you need an item you might have forgotten.
- Convenience foods cost more, so avoid purchasing them unless saving time is more important than saving money.
- Make a list before going to the store. This keeps a person from buying items that may not be used. It also allows the consumer to concentrate on comparing prices and brands instead of trying to remember what food items are needed.
- Avoid shopping when you are hungry.
- Avoid purchasing luxury items on impulse.
- Shopping alone decreases outside influences.
- Large packages can sometimes be less expensive than smaller packages. Check to see if this is true, then purchase the larger quantity if storage is not a problem.
- Purchase in-season fruits and vegetables because they are usually less expensive than those that are out-of-season.
- Use ***unit pricing*** to compare the price of similar items. Unit pricing is the cost for a unit of weight or measure of a product. Sometimes the store will list the unit price and post it under the product. If this price is not listed, unit price can be figured by dividing the price of the product by its weight.

Divide the students into groups of four. Give each group several flyers from grocery stores or newspaper food advertisements. Explain that they are to make two grocery lists comparing prices of food. Distribute the worksheet, "Making a Shopping List," and review the information with the students. After completion, review and discuss their lists.

RESOURCES & MATERIALS

Worksheet: "Making a Shopping List"

Newspaper advertisements of foods
Grocery store flyers

ANSWER KEY

Student's answers will vary.

TEACHER TIP

Do not let this activity become a critique of grocery stores. Remind the students that they are only pricing certain food items.

ESSENTIAL ELEMENT

Mathematics. Problem solving. Experience in solving problems designed to systematically develop students' problem solving abilities through a variety of strategies and approaches. The student shall be provided opportunities to engage in the following types of activities: develop an organized approach to solving application and nonroutine problems appropriate for grade eight.

NAME ______________________________ **DATE** ________________

Making a Shopping List

Unit Pricing is the cost for a unit of weight or measure of a product. You can figure the cost of an item by dividing the price of the product by its weight. For example, if a 16-ounce can of peaches costs $1.01 and a 14-ounce can of peaches costs $.75, which one costs the least per ounce? Figure this by dividing $1.01 by 16 to come up with $.06 per ounce. Then divide $.75 by 14 to come up with $.05 per ounce. (These answers were rounded to the nearest hundredth.) The least expensive way to buy peaches would be in the 14-ounce can.

Price Per Serving means the amount one serving of food will cost based on the price per pound. For example, meat with large bones may cost less per pound, but you will get fewer servings per pound because the weight of the bones will be included. By figuring the price per serving, you can tell which cut of meat will give you the most for your money.

- Bony meat such as short ribs or spareribs will give you one serving per pound.
- Fatty, boneless meat, such as boneless chuck or meat with small bones such as round steak will give you two to three servings per pound.
- Lean, boneless meat such as hamburger or stew meat, will give you three to four servings per pound.

To figure the price per serving, estimate the number of servings the cut will give and divide the price by the number of servings. For example, if a boneless chuck roast costs $5.94 and will give six servings, the price per serving is $.99.

As a group, look through newspaper food advertisements and make a grocery list that will compare lower-priced items with higher-priced items. If you find a coupon and decide to use it, clip it and attach it to your list. Look for the following food items:

> four servings of lean, boneless meat; six servings of fatty, boneless meat such as boneless chuck; or meat with small bones like round steak; six pieces of whole fruit like apples, bananas, or oranges (medium apples weigh 5 ounces, medium bananas weigh 4 ounces, and medium oranges weigh 5 ounces); four servings of milk, yogurt or cheese (a serving is eight ounces of milk, eight ounces of yogurt, or one and a half ounces of cheese); one can of fruit; and one can of vegetables

Remember to use *unit pricing* and *price per serving.*

	Lower-Price List			Higher -Price List		
Food Item	*Type or brand*	*Store A*	*Price per serving or per unit*	*Type or brand*	*Store B*	*Price per serving or per unit*
Lean boneless meat						
Fatty boneless meat or meat with small bones						
Whole fruit						
Milk, yogurt or cheese						
Canned fruit						
Canned vegetable						
			Total			*Total*

LESSON OBJECTIVE

Identify nutrients, their sources, and their functions.

ASSESSMENT CRITERIA

- Identify root-like structures that we use for food.
- Name some of the nutrients we obtain from roots, tubers, and legumes.
- Recognize the maturation process in the plant life cycle.

ACTIVITIES & STRATEGIES

Many nutrients and vitamins come from foods that are root-like structures of plants. Some of the energy we need for work, play, and growth comes from these foods. Some of these foods are roots, and some are tubers and legumes. Ask the students to make a list of edible root-like foods and the nutrients and vitamins in these foods. The following list shows examples of foods, the type of root-like plant structures, and their nutrients:

- carrots - root - vitamin A and carbohydrates
- beets - root - folate and potassium
- potatoes - tuber - carbohydrates and potassium
- sweet potatoes - tuber - vitamin A and carbohydrates
- peanuts - legume - fats and protein
- soybeans - legume - protein

Perform the following experiment to determine the size of the root or root-like structure during a plant's life cycle.

1. Plant six flowering plants that have edible root or root-like structures.
2. Maintain the plants in an identical manner for the investigation.
3. The first two plants should be harvested just as they begin to bud. The next two when the flowers blossom, and the third set, after they have produced seeds.
4. Weigh the roots and root-like structures to determine whether growth has stopped.
5. Record your results on the chart, "Root Power."
5. Conclude whether or not your hypothesis was correct.

Ask the following question and discuss:
Is there a point in a plant's life cycle when it does not continue to store nutrients in the roots or root-like structure?
A plant might stop storing food in its roots and start producing leaves and flowers. If that is the case, the plant should be harvested just before it starts producing leaves and flowers.

RESOURCES & MATERIALS

Worksheet: "Root Power"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

6 flowering plants used for food (radishes or carrots)

Scale

TEACHER TIP

The County Extension Agent may be able to help with seeds, plants, and advice on growing these plants.

ESSENTIAL ELEMENTS

Science. Life science. Manipulative laboratory skills. The student shall be provided opportunities to demonstrate the safe use of microscopes, other biological equipment, and chemicals in life science investigations.
Science. Life science. The use of skills in acquiring data through the senses. The student shall be provided opportunities to observe selected plants and animals and their growth patterns.

NAME ______________________________ **DATE** ______________

Root Power

Question: *Is there a point in a plant's life cycle when it does not continue to store food? A plant might stop storing food in its roots or root-like structures and start producing leaves and flowers. If that is the case, then the plant should be harvested just before it starts producing leaves and flowers.*

Procedure: *Perform the following experiment to determine the size of the root or root-like structure during a plant's life cycle.*

1. *Plant six flowering plants that have edible roots or root-like structures.*
2. *Maintain the plants in an identical manner for the investigation.*
3. *The first two plants should be harvested just as they begin to bud. The next two, when the flowers blossom, and the third set, after they have produced seeds.*
4. *Weigh the roots and root-like structures to determine whether growth has stopped.*
5. *Record your results on the chart below.*

Hypothesis: Expected results

PLANT NUMBER	WEIGHT IN GRAMS OF THE ROOT OR ROOT-LIKE STRUCTURE	POINT IN LIFE CYCLE		
		WHEN BUDS OPEN	WHEN BLOSSOMS APPEAR	WHEN SEEDS ARE PRODUCED
1				
2				
3				
4				
5				
6				

Conclusion: Was your hypothesis correct?

____

____

____

____

Science **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify nutrients, their sources, and their functions.

ASSESSMENT CRITERIA

- Identify soil as plants' primary source of minerals.
- Recognize that plants use minerals for food.

ACTIVITIES & STRATEGIES

Discuss these facts with the students:

- Minerals are necessary for building bones, tissues, and other compounds, as well as for regulating bodily processes.
- Minerals found in large amounts in the body are called macrominerals. Macrominerals include calcium, phosphorus, magnesium, sodium, potassium, and chloride.
- Minerals found in small amounts in the body are called trace minerals. They include sulfur, iron, copper, iodine, fluoride, manganese, selenium, and zinc.

This experiment will compare plants grown in regular soil with plants grown in chemical solutions. Tell the students to record data on the worksheet, "Hydroponics."

At the end of the experiment, discuss the students' results, and ask the following questions:

- Have any students eaten vegetables grown hydroponically? What kind?
- Are there any foods grown hydroponically in this area?
- What are the advantages of hydroponics?

RESOURCES & MATERIALS

Worksheet: "Hydroponics"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Two 5-gallon aquariums
Soil
Calcium nitrate
Potassium acid phosphate
Epsom salts
Ammonium sulfate
Distilled water
Bean seeds
Corn seeds
Zinc sulfate
Manganese sulfate
Boric acid
Wire mesh
Sphagnum moss
Measuring spoons

TEACHER TIP

****CAUTION** These chemicals should not be taken internally or splashed into the eyes. Goggles are recommended for all participants.**

ESSENTIAL ELEMENT

Science. Earth science. The use of skills in drawing logical inferences, predicting outcomes, and forming generalized statements. The student shall be provided opportunities to formulate an earth science hypothesis from experimental data.

NAME ______________________________ **DATE** ________________

HYDROPONICS

Question: Will plants grow best in regular soil or in chemical solutions?

Hypothesis: (What do you think?) ______________________________

____

Materials: Two 5-gallon aquariums, soil, distilled water, beans, corn seeds, wire mesh, measuring spoons, chemicals supplied by the teacher.

Procedure:

1. Put soil into one aquarium.
2. Plant bean and corn seeds with distilled water.
3. Cut a piece of wire mesh the same width, but several inches longer than the inside dimensions of the second aquarium.
4. Bend the ends and insert it so it forms a table a few inches above the floor of the container.
5. Scatter *sphagnum* moss over the wire table.
6. Place the corn and bean seeds over the top of the moss.
7. Make the following solutions.
8. Add one teaspoon of solution B and three tablespoons of solution C to solution A to make the final mixture.
9. Pour the chemical mixture into the bottom of the aquarium to the level of the wire.
10. When the seeds germinate, the roots will grow down into the prepared chemical solution.
11. Each week measure the growth of the plants in inches and record the information.

Solution A: → Dissolve in one cup of water:

2 teaspoons calcium nitrate
1/2 teaspoon potassium acid phosphate
1 1/4 teaspoons Epsom salts
1/4 teaspoon ammonium sulfate

→ Pour this solution into two and one-half gallons of water

Solution B: → Dissolve 1/8 teaspoon of each in one cup of water:

zinc sulfate
manganese sulfate
boric acid

Solution C: → Dissolve one eighth teaspoon of ferrous sulfate into a cup of water.

Results:

WEEK	SEEDS IN SOIL	SEEDS IN CHEMICALS
WEEK 1		
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		

Conclusion: (Was your hypothesis correct?) ______________________________

LESSON OBJECTIVES

- Identify nutrients, their sources, and their functions.
- Discuss nutritional needs of adolescents.

ASSESSMENT CRITERIA

- Discuss the importance of protein in the daily diet.
- Demonstrate the presence of protein in food sources.

ACTIVITIES & STRATEGIES

Protein is the main component of every cell in the human body. The body uses protein:

- as enzymes
- to maintain the body's fluid balance
- as antibodies
- as hormones
- to transport nutrients
- to repair cells and growth
- as energy

Protein's other functions are so important that using protein for energy is undesirable. However, the average American eats twice as much protein as is needed and the excess is either excreted or stored as fat.

Amino acids are the building blocks of proteins. There are 22 amino acids. Nine of these are called essential amino acids. These are the ones the body cannot manufacture, and we can only get them from our diet. Generally, animal products are "high quality" protein and supply all the essential amino acids. Plant products do not contain all the essential amino acids and are called incomplete proteins. Plant foods can be combined to make a complete protein such as peanut butter on wheat bread or rice and beans.

Discuss the increased need for protein during adolescence. Growth is the primary reason why adolescents need more protein.

The following experiment will help students identify which foods are high in amino acids, the building blocks of protein.

1. Prepare a 5 percent solution of copper sulfate.
2. Dissolve a tablespoon of powdered lime in a cup of water.
3. Add equal parts of these two solutions to a slice of cheese with an eyedropper.
4. If protein is present, a violet color will appear.
5. Experiment with different foods. Which foods contain protein?

RESOURCES & MATERIALS

Worksheet: "Testing for Protein"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Copper sulfate
Powdered lime
Measuring spoons
Measuring cup
Eye dropper

One slice of cheese
Other food sources

TEACHER TIP

****CAUTION**** **Copper sulfate is poisonous and should not be ingested.**

To make a 5 % copper sulfate solution, dissolve 5 grams of copper sulfate in 100 ml of water.

ESSENTIAL ELEMENTS

Science. Life science. Experience in identifying and manipulating the conditions of investigations. The student shall be provided opportunities to identify the variables remaining constant, the variables being manipulated, and the variables responding in a life science investigation.
Science. Life science. Manipulative laboratory skills. The student shall be provided opportunities to demonstrate the safe use of microscopes, other biological equipment, and chemicals in life science investigations.

NAME ______________________ **DATE** ______________

Testing for Protein

Directions:

1. You will be given two solutions: one contains copper sulfate and the other a lime and water mixture.
2. Using an eyedropper, put one drop of each of the solutions on the food source to be tested.
3. A violet color will appear if protein is present after adding the drops of the prepared solutions.
4. Write the color on the chart.
5. Record your conclusions in the space below.

Food source	Cheese			
Color				

Conclusion:

Science **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Identify the factors involved in preventing food-borne illness.
- Explain the physiological, psychological, and social implications of food.

ASSESSMENT CRITERIA

- Recognize the value of the chemical senses, taste and smell, to good nutrition.
- Observe the value of smell in the sensation called *taste*.

ACTIVITIES & STRATEGIES

The chemical senses, taste and smell, are closely related to good nutrition. Without the pleasures derived from these senses, eating would become a chore. We would not enjoy eating, and therefore would jeopardize our very existence. The chemical senses also protect us from eating spoiled foods which could be detrimental to our health and wellness.

Discuss placement of taste buds in the mouth.

This investigation is designed to show the importance of smell to the sensation called *taste*. It is difficult to tell the difference between raw apple, potato, and onion when smell has been eliminated. Give each student the worksheet, "Taste Without Smell Observation Chart." Review the instructions with the class.

1. Prepare raw apple, a potato, and an onion by grating them onto plates. Rinse the grater well after each food.
2. Divide the students into pairs.
3. Blindfold and put nose clips on the student participating.
4. Use a plastic fork to put one-fourth teaspoon of one of the foods on the tongue of a subject. (The subject is not to chew the food, but to simply roll it around in his or her mouth with the tongue, and then spit it out on a napkin.)
5. Fill out the observation chart.
6. Repeat with the other student.

Discuss the results of the investigation and ask the students to list some ways the senses protect us.

RESOURCES & MATERIALS

Worksheet: "Taste Without Smell Observation Chart"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Grater
Blindfolds
Nose clips
Napkins
Raw apple
Raw potato
Raw onion

ESSENTIAL ELEMENT

Science. Life science. Experience in oral and written communication of data in appropriate form. The student shall be provided opportunities to describe the essential life activities carried on by living cells.

NAME ______________________________ DATE ________________

Taste Without Smell

Observation Chart

Subject's Name	Sample	Identified as ?	Number Identified Correctly
	apple		
	potato		
	onion		
	apple		
	potato		
	onion		
	apple		
	potato		
	onion		
	apple		
	potato		
	onion		

Conclusion:

1. Which sample was the easiest to identify?

2. Which two were confused the most?

3. Were some subjects better at telling differences than others?

4. How is the sense of smell important?

LESSON OBJECTIVE

Identify the factors involved in preventing food-borne illness.

ASSESSMENT CRITERIA

Recognize the destructive effects of mold on food products.

Science **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Although penicillin and several types of cheeses are produced by mold, mold destroys billions of dollars worth of nutritious food worldwide each year. Molds also are responsible for some allergies.

Bread mold is a quick-growing food contaminant. Ask students to perform the following investigation to find out if bread mold will grow on other products or bread only.

1. Obtain one piece of molded bread.
2. Place about one-fourth inch of water and a food sample in resealable plastic bag.
3. Drag a cotton swab across the piece of molded bread and then wipe the swab on each sample. Use a new swab for each sample.
4. Put the bags in a dark area for three days. Discard the molded bread.
5. Without opening the bags examine each food sample. Did the mold grow on all samples? Are the molds identical? If not, why not?

This is a discovery lesson. Variables such as the foods chosen and environmental factors (temperature, humidity) will affect the growth rate of the molds.

Discuss the following information about molds:

- Molds are fungi that may or may not be harmful to humans.
- Molds are furry-looking fungi that can grow on almost any food at almost any storage temperature, under almost any conditions—moist or dry, acidic or nonacidic, salty, or sweet.
- The color of mold is usually white but also can be blue-green, orange, black, gray, or even red.
- Certain molds produce toxins that have been known to cause cancer in animals.
- Food items such as yogurt, sour cream, cheese slices, jams and jellies, tomatoes, and cucumbers with mold spots should be discarded.

(Continue to the opposite column.)

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Resealable plastic bags
Molded bread
Cotton swabs
Food samples:
  Carrot
  Orange
  Cereal
  Toast
  Cookie
  Potato
  Oatmeal

Information about molds (continued):

- Freezing prevents the growth of molds. but does not kill those already present in food.
- Some molds give a musty odor and flavor to foods.
- Some people have developed allergies to certain molds. These allergies affect the sinuses, eyes, ears, and respiratory tract.

TEACHER TIP

Some students may be allergic to molds, so discard the resealable plastic bags without opening them.

ESSENTIAL ELEMENT

Science. Life science. Manipulative laboratory skills. The student shall be provided opportunities to demonstrate the safe use of microscopes, other biological equipment, and chemicals in life science investigations.

Science Grades 7/8

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Identify the factors involved in preventing food-borne illness.

ASSESSMENT CRITERIA

Construct questions about food safety and the prevention of food-borne illness to ask the cafeteria manager.

ACTIVITIES & STRATEGIES

Discuss the following information regarding food safety with the students:

- ***Food-borne illness*** is often the cause of an upset stomach that is thought to be caused by flu.
- There is not always a detectable odor or off-flavor in foods contaminated with harmful bacteria; therefore, people are not always aware of the real cause of an illness.

Review the information regarding food safety contained in the opposite column and in the "Instructor's Resource Guide for Teaching Nutrition Education."

Point out the different types of ***microorganisms*** that affect food. Discuss the "Food Safety Guidelines—Avoiding Food-borne Illnesses."

Instruct each student to write three questions to ask the cafeteria manager regarding food safety.

Invite the cafeteria manager to the classroom to discuss food safety. Encourage the students to ask the questions that they have prepared for this interview.

Assign the students to write a paragraph summarizing the information discussed with the cafeteria manager.

RESOURCES & MATERIALS

"Instructors Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Guest speaker: cafeteria manager

FOOD SAFETY GUIDELINES—
AVOIDING FOOD-BORNE ILLNESSES

- Refrigerate or freeze leftovers immediately after use.
- Thaw frozen foods in the refrigerator, never on the counter. The warm temperature is a perfect environment for microorganisms to thrive.
- Keep hot foods hot, and cold foods cold. Lukewarm temperatures allow bacteria to grow.
- Use a meat thermometer when cooking meat and poultry. Insert the thermometer in the thickest part of the meat away from the bone. For poultry, the internal temperature should reach 180° to 185°F.
- Use a different cutting board and different utensils for preparing fruits and vegetables than is used to prepare raw meat and poultry.
- Carefully wash all utensils used to prepare raw meat and poultry in hot, soapy water.
- Wood cutting boards can be thoroughly cleaned in a bleach and water solution. The bleach will kill any bacteria left on the cutting board.

In advance, invite the cafeteria manager to the classroom to discuss food safety with the students.

ESSENTIAL ELEMENT

Science. Life science. Experience in oral and written communication of data in appropriate form. The student shall be provided opportunities to describe the essential life activities carried on by living cells.

LESSON OBJECTIVE

Identify the factors involved in preventing food-borne illness.

ASSESSMENT CRITERIA

Recognize that the growth of microorganisms can affect the taste, texture, and safety of food.

ACTIVITIES & STRATEGIES

Define microorganism.

Refrigeration or lowering the temperature of food helps preserve its nutritional value. Refrigeration also slows the growth of microorganisms, and freezing stops their growth. Freezing does not kill the microorganisms, however; when thawing occurs, the microbes will start growing again.

Divide the class into five groups, and assign each group a food-borne illness. Next, have students study their illnesses, create a situation, and plan a skit, being sure to include all information on the handout concerning their illnesses.

Discuss the dangers of freezing foods several times.

One disadvantage of freezing is that it can change the texture and palatability, or taste, of the food, especially vegetables and fruit.

Conduct the following experiment to determine if freezing affects the firmness and taste of zucchini squash.

1. Slice a zucchini into one-half inch slices.
2. Put half of the zucchini into a plastic bag and put it into the freezer. Put the other half into a plastic bag and put it into the refrigerator.
3. The next day, allow the frozen zucchini to thaw completely and then compare the texture and taste of the two samples. Explain that freezing the zucchini can damage the cell walls and cause the vegetable to lose its crispness.
4. Optional foods to freeze: potato, celery, or lettuce.

Look at samples under a microscope to determine cell damage.

Discuss the results of the experiment.

RESOURCES & MATERIALS

Handout: "Food-borne Illness"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Resealable plastic bags
Pans
Refrigerator
Zucchini squash
Optional foods (potato, celery, lettuce)

TEACHER TIP

Discuss with students why ice is one of the few solids that floats in its own liquid. As it cools, it forms a crystalline structure (honeycomb) which is an open-framework. It takes up more space, is less dense, and is one of the few substances that expands as it cools.

ESSENTIAL ELEMENT

Science. Life science. Experience in identifying and manipulating the conditions of investigations. The student shall be provided opportunities to identify the variables remaining constant, the variables being manipulated, and the variables responding in a life science investigation.

Food-borne Illness

- Divide the class into five groups.
- Give each person a copy of the chart below.
- Assign each group an illness. Each group is to role play or present a skit using a particular situation to include the information concerning that illness.

An example of staph is:

A mother bought sandwiches which been made by someone who carries the *Staphylococcus Aureus*. Her children ate the sandwiches. One child had a very low resistance to the bacteria, became ill, and had to go to the doctor.

An example of *Salmonellosis* is:

Leaving the turkey and dressing on the kitchen counter after the Thanksgiving dinner so the family could snack on it when desired. A person got sick, and the doctor stated it was because the salmonella bacteria had grown on the food left at room temperature and had contaminated it.

Illness	Bacteria Responsible	Description	Habitat	Types of Foods	Symptoms	Cause	Temperature Sensitivity
Staph	Staphylococcus aureus	Produces a heat-stable toxin.	Nose and throat of 30 to 40% of healthy population; also on skin and superficial wounds.	Meat and seafood salads, sandwich spreads, and high-salt foods.	Nausea, vomiting, and diarrhea within 4 to 6 hours. No fever.	Poor personal hygiene and subsequent temperature abuse.	No growth below 40°F. Bacteria killed by normal cooking.
Salmonellosis	Salmonella	Produces an intestinal infection.	Intestinal tracts of animals and humans.	High-protein foods—meat, poultry, fish, and eggs.	Diarrhea, nausea, chills, vomiting, and fever within 12 to 24 hours.	Contamination of ready-to-eat foods, insufficient cooking, and recontamination of cooked foods.	No growth below 40°F. Bacteria are destroyed by normal cooking.
Perfringens poisoning	Clostridium perfringens	Produces a spore and prefers low-oxygen atmosphere Live cells must be ingested.	Dust, soil, and gastrointestinal tracts of animals and humans.	Meat and poultry dishes, sauces, and gravies.	Cramps and diarrhea within 12 to 24 hours. No vomiting or fever.	Improper temperature control of hot foods and recontamination.	No growth below 40°F. Bacteria are killed by normal cooking, but a heat-stable spore can survive.
Botulism	Clostridium botulinum	Produces a spore and requires a low-oxygen atmosphere. Produces a heat-sensitive toxin.	Soils, plants, marine sediment, and fish.	Home-canned foods.	Blurred vision, respiratory distress, and possible death.	Improper methods of home-processing foods.	Type E and type B can grow at 38°F. Bacteria destroyed by cooking and the toxin is destroyed by boiling for 5 to 10 minutes. Heat-resistant spore can survive.
Listeriosis	Listeria monocytogenes	Survives adverse conditions for long time periods.	Soil, vegetation, and water. Can survive for long periods in plant materials.	Milk, soft, cheeses, and vegetables fertilized with manure.	Mimics meningitis. Immunocompromised individuals most susceptable.	Contaminated raw products.	Grows at refrigeration (38°F to 40°F) temperatures. May survive minimum pasteurizationt emperatures (161°F for 15 seconds).

LESSON OBJECTIVE

- Make wise food choices as part of self-responsibility for health and wellness.
- Identify nutrients in food, their sources, and their functions.

ASSESSMENT CRITERION

- Identify the function and the sources of the mineral, iron.
- Compare the amount of iron in different fruit juices.

Science **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

The main job of iron in the body is to produce hemoglobin in the red blood cells. The hemoglobin carries oxygen from the lungs to all the cells in the body.

If the diet has too little iron, then the blood can not move the oxygen which leads to a disease called anemia. A person suffering from anemia will be tired and listless.

Major sources for iron are red meats, egg yolks, dried legumes, leafy green vegetables, and enriched breads.

Some fruit juices contain iron, although they are not considered a major source of iron. Vitamin C foods such as citric juices enhance iron absorption.

The following investigation is a simple test for the presence of iron. It may be done as a demonstration or by the students themselves.

1. Collect as many different kinds of fruit juices as possible.
2. Pour about one inch of each juice into a glass.
3. Next prepare two cups of strong tea, and pour about one inch of it into each glass containing a juice.
4. The tannic acid in the tea will combine with the iron in the juice, and the mixture will become cloudy.
5. Record data on the worksheet, "Liquid Iron," and discuss the conclusions.

Extension:
Invite the school nurse or a representative from the American Red Cross to class to demonstrate, on herself/himself or the teacher, how to do a hematocrit and explain how it is used to diagnose anemia.

RESOURCES & MATERIALS

Worksheet: "Liquid Iron"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Strong tea

Fruit juices such as apple, orange, lemon, grapefruit, pineapple, cranberry, and grape juice from red or purple grapes

Glasses (one for each liquid)

School nurse or a representative from the American Red Cross

TEACHER TIPS

- **To prepare strong tea, place 4 teabags in 2 cups of boiling water and steep for five minutes.**
- **Food composition tables indicate that prune juice, apple juice, and pineapple juice contain more iron than most other fruit juices.**

ESSENTIAL ELEMENT

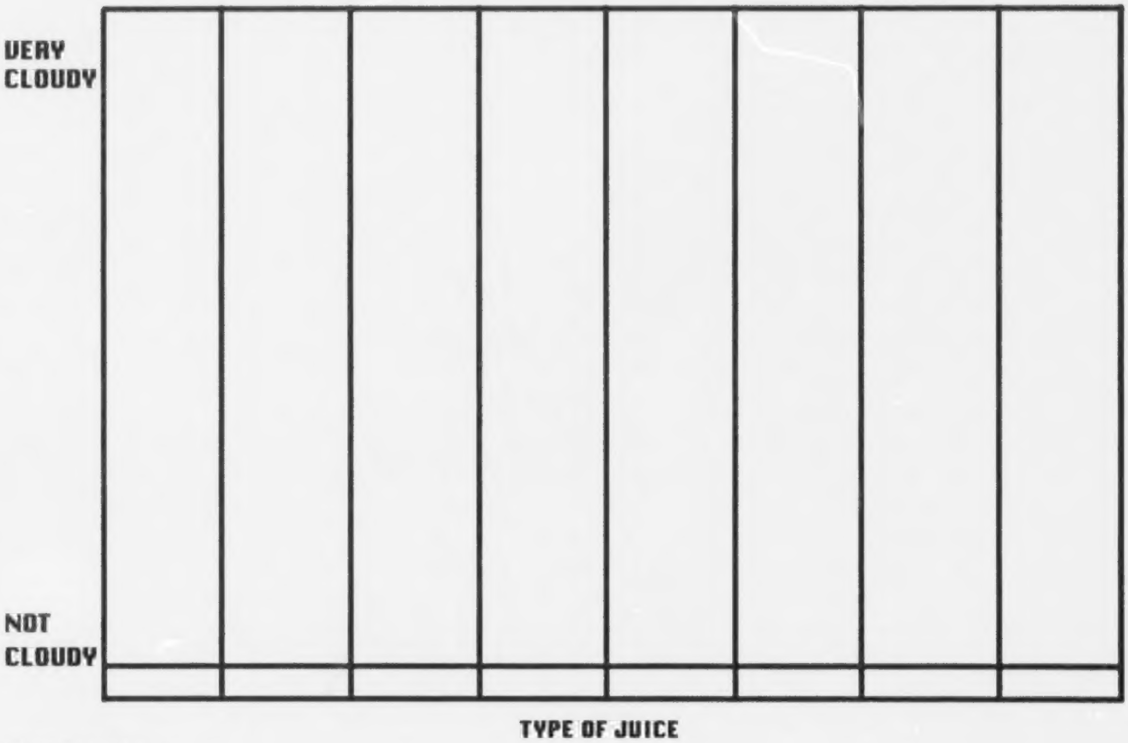
Science. Earth science. Manipulative laboratory skills. The student shall be provide opportunities to demonstrate skills using laboratory instruments.
Sciencen. Earth science. Experience in identifying and managing the conditions of investigations. The student shall be provided opportunities to identify the variables remaining constant, the variables being manipulated, and the variables responding in an earth science investigation.

NAME ______________________ DATE ______________

LIQUID IRON

Procedure:

1. Pour one inch of each juice into a different glass.
2. Prepare two cups of strong tea.
3. Pour one inch of the tea into each glass containing juice.
4. The tannic acid in the tea will combine with the iron in the juice and the mixture will become cloudy.
5. Record your observations on the bar graph below.



Conclusion:

1. Which juices contained the most detectable iron?
2. Which juices contained no detectable iron?
3. Which juice contained the most iron?

LESSON OBJECTIVE

Analyze personal food habits.

ASSESSMENT CRITERIA

Examine the benefits of chewing food to aid digestion.

ACTIVITIES & STRATEGIES

When food is eaten, it is broken down into simple chemicals so that it can be used by the body. The proteins are broken down into amino acids, starch is broken down into simple sugars, and fats are broken down into fatty acids. This process is called digestion.

Food that is not chewed may pass through the body without its nutrients being fully used by the body.

The process of digestion begins in the mouth. The teeth bite, chew, and grind the food into smaller pieces. Chewing food makes it easier for the nutrients to get out of the food and to be processed by the digestive chemicals in the mouth, stomach, and intestines.

The following experiment will demonstrate that food in smaller pieces can be digested more easily than whole food.

1. Peel a potato; cut it in half.
2. Put one half in a glass. Grate the other half and put it in a glass.
3. Fill the two glasses half-way to the top with water and stir gently.
4. Now take five teaspoons of water from each glass and put them into two separate clean glasses.
5. Add one drop of iodine to each.
6. Ask the students to explain the changes in the potatoes: A potato contains starch (a form of carbohydrates), and the iodine is a test for starch. Grating the potato made it easier for the starch to come out of the potato and into the water. In the same way, chewing food makes it easier for the nutrients to come out of the food.

Tell students to write a lab report based on the observations made in this experiment.

Extension: Review and discuss the questions found in the opposite column about carbohydrates.

RESOURCES & MATERIALS

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

Four glasses
Knife
Teaspoon
Grater
Iodine
One large potato

Discussion Questions:

1. What foods contain carbohydrates? (fruits, vegetables, grains, cereals, bread, pasta)
2. What does the body do with carbohydrates? (converts to glucose—energy)
3. How much carbohydrates should one eat? (55 to 60 percent of the day's calories should come from carbohydrates)

CAUTION
Iodine is poisonous and should not be taken internally. It will also stain clothing.

ESSENTIAL ELEMENT

Science. Life science. Experience in identifying and manipulating the conditions of investigation. The student shall be provided opportunities to identify the variables remaining constant, the variables being manipulated, and the variables responding in a life science investigation.

LESSON OBJECTIVE

Investigate new developments in food trends.

ASSESSMENT CRITERIA

- Discuss the nutritional problems of the world.
- Perform an experiment to determine if algae is a nutritious food source.

ACTIVITIES & STRATEGIES

Over half the people in the world are undernourished. Allow students to prepare and present oral reports on worldwide starvation or possible solutions to the hunger problems of the world.

Algae grows freely in lakes, rivers, seas, oceans, swimming pools, and small bodies of water. Algae could possibly be farmed and harvested in oceanic farms to help supply the food needs of people worldwide. But is algae nutritious? Use the following procedure to test algae for starch, sugar, and protein.

1. Put a one-gallon jar of water containing a water plant, such as Elodea, in the sunlight for one week, or until the water turns green.
2. Remove the plant, and filter the green algae using a paper filter.
3. Test for the presence of starch by putting a drop of iodine on a sample of algae. A change in color to a dark blue or black indicates the presence of starch.
4. Test for the presence of sugar by boiling some of the algae in a half cup of alcohol, and then add several drops of Benedict's solution. If sugar is present, a red-orange precipitate will form.
5. Test for protein using the Protein Test in the opposite column.
6. Discuss the results of the experiment and its implications for solving the hunger problems of the world.

Extension:
Discuss carrageen, a seaweed currently being used as a filler in ground beef to help lower the overall fat content of the beef.

RESOURCES & MATERIALS

One-gallon jar
Iodine
Water plant, such as Elodea, from a pet store
Benedict's solution
Filter paper
One half cup of alcohol
Heat source
Copper sulfate
Water
Powdered lime

Protein Test

1. Prepare a 5% copper sulfate solution (5 grams copper sulfate to 100 ml water).
2. Dissolve 1 tablespoon powdered lime in 1 cup water.
3. Add equal parts of these two solutions to a sample of the food source (algae).
4. If protein is present, a violet color will appear.

CAUTION

Iodine is poisonous and should not be taken internally; it will also stain clothing.

ESSENTIAL ELEMENT

Science. Earth science. Properties and relationships of objects/events (spatial arrangements, positions, etc.) to other objects and events. The student shall be provided opportunities to contrast human activities that affect the natural environment.

LESSON OBJECTIVE

Examine food traditions.

ASSESSMENT CRITERIA

Research and report information about the Mexican-Texan holidays.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:
- The history of Texas has been shaped by its native peoples and the successive waves of explorers, pioneers, and immigrants.
- People of different cultures came from around the world to settle in Texas.
- The six flags that have flown over the state include the French, Spanish, Mexican, Republic of Texas, Confederate, and United States.

Read to the students the Mexican Texas section of "The Six Flags of Texas" cultural information found at the beginning of the seventh/eighth grade lesson plans. Note the fiestas or festivals and historical holidays celebrated by the Mexican Texans.

Instruct the students to research and write a one-page report on the holidays, fiestas, and celebrations held by Mexican Texans. Encourage them to pay careful attention to the reasons that these days are observed and the types of foods prepared and eaten at these celebrations.

After students complete their papers, allow time for the students to share their information with the class.

Additional activity:
Allow the students to divide themselves into groups of three or four and select a country or group of people that has had an influence on Texas.

Each group should creatively present to the class the information pertaining to a particular holiday associated with the selected country or people.

Ask students to present their information on "International Day."

RESOURCES & MATERIALS

"The Six Flags of Texas" resource information found at the beginning of the seventh/eighth grade *ESR IV* lesson plans

Library resources

ESSENTIAL ELEMENT

Social studies. Texas history and geography. Exploration and colonization of Texas. The student shall be provided opportunities to describe the history of the earliest inhabitants and settlers of Texas.

LESSON OBJECTIVE

Examine food traditions.

ASSESSMENT CRITERIA

Research and report information about peanuts.

Social Studies **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Demonstrate for the students how simple it is to make peanut butter.

- Slowly add two cups of roasted, shelled, and salted peanuts to a blender.
- Grind until mixture turns the consistency of peanut butter.
- Allow the students to taste the product by spreading it on crackers or apple slices.

Point out that the value of the peanut and its many uses was discovered by Dr. George Washington Carver. List other uses for the peanut.

Divide the class into eight groups. Allow each group to choose one of the eight research topics. Inform the students that they are to research their assigned topic and write a one-page paper that will be presented to the class.

The topics for research are:
- Dr. George Washington Carver until 1896
- Dr. George Washington Carver after 1896 (not to include awards and honors)
- Awards and honors of Dr. George Washington Carver
- Description of the peanut
- Uses of the peanut as a food and in industry
- Growing and cultivating the peanut (include a drawing of how the plant grows peanuts)
- Processing of the peanut
- History of the peanut
- Nutritional value of peanuts

After students have completed their one-page papers, ask each student to present their paper to the class.

Extension:
Discuss the latest trends in peanut butter:
- whipped
- natural

Bring a jar of each of these types of peanut butter to class and allow students to sample them.

RESOURCES & MATERIALS

The Gold Peanut, produced by Custom Comic Services. Educational and Promotional Comic Books, P.O. Box 50028, Austin, Texas 78763

Copies of *The Gold Peanut* and additional educational materials are available from the National Peanut Council, 1500 King Street, Suite 301, Alexandria, Virginia, 22313

Encyclopedias
Dictionaries
References

Two cups of roasted, shelled, and salted peanuts
Crackers
Apple slices

Blender
Spatula
Butter knives

TEACHER TIPS

- **It may be necessary to add a few drops of vegetable oil to the peanuts to achieve the proper consistency.**
- **Allow two class periods for the completion of this activity, if necessary.**

ESSENTIAL ELEMENT

Social studies. United States history and citizenship (civics). Economic development and growth of the United States. The student shall be provided opportunities to identify significant American business, industrial, and labor leaders.

Social Studies **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVES

- Analyze the customs of early Texas settlers.
- Investigate cultural influence on food in Texas.

ASSESSMENT CRITERIA

- Examine the different cultures in Texas.
- Assess a recipe of French origin.

ACTIVITIES & STRATEGIES

Lead a class discussion about Texas culture:

- Texas has one of the most varied native cuisines in the world because of the six different flags that have reigned over Texas.
- The six flags that have flown over Texas include: Confederate, French, Mexican, Spanish, Texas, and Union.
- Many people identify barbecue, hamburgers, chicken-fried steak, and fried chicken as typical Texas foods.
- Recipes were called "receipts" for many years, as they were "received" from friends whose forefathers were early settlers.
- The first flag to fly over Texas was that of Spain.
- LaSalle founded a colony in southeastern Texas in 1685.
- The French food influences include:
  - creole: a sauce created with tomatoes, green peppers, onions, and spices
  - gumbo: a name for okra, usually mixed with a creole soup or sauce
  - saute´: a method of cooking vegetables using little fat
- The influences of land and climate on French recipes:
  - the Gulf coast was suited to raise rice, which became a staple
  - corn was obtained from the Native Americans
  - seafood came from the coastal waters

Distribute the worksheet, "Hominy Griddle Cakes." Explain that the recipe occurred as a direct result of the climate being suitable for growing corn. Hominy is a corn product. It is made by soaking corn in a weak lye solution. This causes the kernels to puff up. The skins come free and float to the top. The kernels are then washed to make them ready to eat.

Prepare "Hominy Griddle Cakes" followed by an opportunity for tasting. The recipe may need to be doubled depending on the size of the class.

Discuss student responses to the questions following the recipe on the worksheet, "Hominy Griddle Cakes." This may be an oral or written activity.

RESOURCES & MATERIALS

Worksheet: "Hominy Griddle Cakes"

Electric skillet or griddle, colander, mixing bowl, mixing spoon, small mixing bowl, heatproof spatula, fork or egg beater, napkins or paper plates, plastic forks

Ingredients for Hominy Griddle Cakes:
1 cup hominy (one can equals 2 cups)
3/4 cup whole wheat flour
1 1/2 cups buttermilk
3 eggs, beaten
1/4 cup margarine, melted
2 T. sugar
1/2 t. salt
1/2 t. soda
2 t. baking powder
Syrup

Nutritive analysis of one hominy griddle cake (the recipe will yield 16 four-inch cakes):

Calories	82
Protein	26 g
Fat	5.1 g
Carbohydrate	131 g
Cholesterol	52 g
Percentage of calories from fat	56%

TEACHER TIPS

- **If the recipe is not demonstrated in class, encourage the students to prepare it at home.**
- **Once a month, the exhibit floor of the Institute of Texan Cultures in San Antonio becomes a federal courtroom where immigrants from all over the world become naturalized U.S. citizens. If you are in the vicinity, a learning tour to view the naturalization ceremony would be enlightening for students. For more information, write the Institute of Texan Cultures, P.O. Box 1226, San Antonio, Texas 78294. (512) 226-7651.**

ESSENTIAL ELEMENT

Social studies. Application of social studies skills. The student shall be provided opportunities to analyze information, sequence historical data and information, and perceive cause-effect relationships.

NAME ______________________________ **DATE** ________________

Hominy Griddle Cakes

1 cup of canned hominy
1 1/2 cups buttermilk
3 eggs, beaten
1/4 cup margarine, melted
2 T. sugar
1/2 t. salt
3/4 cup whole wheat flour
1/2 t. soda
2 t. baking powder

Mash the hominy through the colander into a large bowl. Stir in the buttermilk. Beat eggs and add to the hominy mixture. Measure the sugar and salt and add to the melted margarine. Combine both mixtures and stir until smooth. Mix the soda and baking powder with the flour. Add to the egg and milk mixture. Beat well. Drop by spoonfuls onto a hot griddle or electric skillet. The cakes are ready to turn with a spatula when bubbles appear on the top. Serve with syrup.

If a rangetop or microwave is not available, soften the margarine by placing it in a warm place for a few minutes.

Respond to the following questions:

1. What other foods might possibly have been influenced by the French Texans?

2. How did the success of corn as a staple Texas crop influence its use by other Texas cultures?

3. Write a short article for a Texas newspaper published in the year 2050. Describe cultural influence on Texas foods. (Use the back of this worksheet if necessary.)

LESSON OBJECTIVE

Develop an understanding of cultural food differences.

ASSESSMENT CRITERIA

Write a letter that describes Spanish food items.

Social Studies **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Discuss this information about foods used by Spanish settlers:

- When the Spanish came to the New World, they brought horses, cattle, and other domesticated animals unknown to the Native Americans.
- When the Spanish missionaries came into East Texas, they found several Native American tribes raising corn, beans, and melons.
- The Native Americans welcomed the priests and fed them tamales and mush.
- Texas history mentions that Native Americans fed the colonists these foods, along with peppers, corn, and wild game.
- Colonists in Texas used a variety of foodstuffs in their menus depending on what was available.
- Common foods consisted of sugarcane, peaches, wild fruits and berries, beans, corn, chilies, salt, lentils, vegetables, potatoes, beef, mutton, chicken, pork, and venison.
- There was an abundance of game: cattle, turkey, buffalo, antelope, deer, and wild horses.
- Foods found in the woods included: wild grapes, plums, persimmons, and berries.
- Hickory nuts and pecans were found along streams.
- Basic Spanish foods were fish, rice, and wild game, seasoned very subtly with herbs.
- Corn recipes, a favorite among the pioneer cooks, were used to make a custard or bread.
- Spanish settlers pressed corn into a sweet syrup. Our country molasses may have come from this process.
- The Spanish pioneers used persimmons to make a pudding, sweet potatoes to make cookies, and rice to make breakfast cakes that were sold on the street.
- Some of the settlers' favorite recipes were Spanish omelets, jambalaya, Spanish rice, and creole, a dish made with tomatoes, peppers, and seasoning served over rice.

Distribute and review the worksheet, "Estimado Madre Y Padre." Instruct the students to complete the worksheet, then ask some students to share their letters.

RESOURCES & MATERIALS

Worksheet: "Estimado Madre Y Padre"

"The Six Flags of Texas" resource information found at the beginning of the seventh/eighth grade *ESR IV* lesson plans

Textbooks
Encyclopedias

In advance, ask the cafeteria manager if a food item with Spanish origins could be included in the school lunch menu.

ESSENTIAL ELEMENT

Social studies. Texas history and geography. Exploration and colonization of Texas. The student shall be provided opportunities to describe the history of the earliest inhabitants and settlers of Texas.

Estimado Madre y Padre,

Name ______________ Date ________

Instructions:
Take the role of a Spanish settler.

Write a letter to your parents, who still live in Spain, convincing them that you are taking good care of yourself and are eating wisely.

Research in your textbook or encyclopedia about what life was like for the Spanish settlers.

Include your research in the letter along with historical events that occurred in the New World.

Include information about the foods that were available to Spanish settlers.

Be creative!!

Social Studies **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

Develop an understanding of cultural food differences.

ASSESSMENT CRITERIA

- Develop an awareness of another culture's food habits.
- Appraise the strengths and weaknesses of another culture's dietary habits.

ACTIVITIES & STRATEGIES

Distribute the handout, "The Kenyan Kitchen" to each student. Ask for a volunteer to read each section aloud.

Discuss cultural food differences in an open forum.
- Would the students be willing to try the unfamiliar foods if they were in Kenya as an exchange student?
- Peanut sauce or pumpkin leaves may sound different. What foods that have similar roles in the American diet may sound different to Eva?

Distribute the handout, "Appendix C: A Pattern for Daily Food Choices." Using the suggested servings of each food group, ask students to identify foods from the list on the handout, "The Kenyan Kitchen," that would satisfy requirements for teens.

As they name the foods and categorize them according to each food group, write them on the chalkboard. Lead the class in appraising the Kenyan diet by asking:
- What food groups have an abundance of choices?
- Which food groups have limited or no selections?
- Can students think of weaknesses in the typical American diet? Remind them of fast food restaurants in America.
- How have fast food restaurants affected the student's eating habits?
- What might a Kenyan teen have as an option for a quick snack food instead of fast food from a restaurant?

Continue open discussion and appraisal of the Kenyan diet as time allows, focusing on the essential element targeted in this lesson.

Display, then cut, the Kenyan fruits for the students to sample. Encourage them to taste the fruits that they have not tried before.

RESOURCES & MATERIALS

Handout: "The Kenyan Kitchen"

Handout: "Appendix C: A Pattern for Daily Food Choices"

"Heart Decisions," American Heart Association Schoolsite Program, Middle School

Fruits to sample:
plantain
mango
papaya
guava
passion fruit

Napkins
Knife

ESSENTIAL ELEMENT

Social studies. Attitudes, values, and skills for citizenship. Respect for self and others. The student shall be provided opportunities to be aware that some things are valued more in some groups and cultures than in others and recognize how societal values affect individual attitudes.

NAME ______________________________ **DATE** ________________

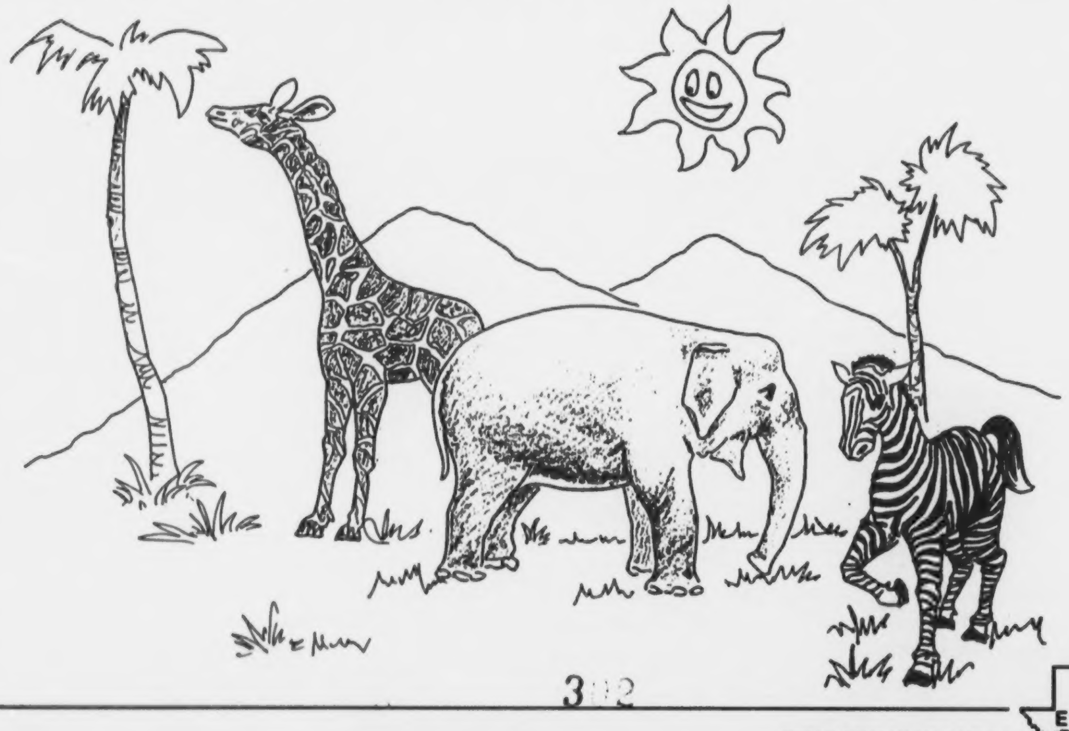
The Kenyan Kitchen

Eva is an exchange student from Meru, Kenya, an affluent district in the Eastern part of the country. Kenya is an African nation that follows the British parliament form of government. The educational system is newly modeled from the American system. While dietary habits of the people from this area are influenced by British and American cultures, the primary influence is the climate.

Eva describes a basic diet of a person from the district of Meru, Kenya:

- oranges, papayas, mangos, *plantain* (a banana-like fruit), wild red berries, guava, passion fruit
- carrots, cabbage, potatoes, corn, pumpkins, okra
- *porridge* made from millet or sorghum, much like oatmeal
- *ugali* (made by boiling water, then stirring cornmeal or maize meal into it)
- wheat bread, white bread
- fresh milk, homemade butter
- roasted hen, broiled fish, beef, eggs
- *green grams* (tiny lentil beans)
- *rio* (a combination corn and bean dish), green peas, peanuts
- peanut sauce (a sauce made from ground peanuts used as a gravy over meat, spinach, or bananas)
- pumpkin leaves, bean leaves, spinach, turnip greens
- tea, fresh juices, mountain spring water

Eva classifies America as a *snacking society*. She says a snack to a Kenyan would be picking a piece of fruit off a tree and eating it, not the typical packaged snack of an American. Eva says Kenya grows and drinks an abundance of tea. Almost all of her family's food is home-grown. Currently, Kenya has only a few fast food restaurants.



LESSON OBJECTIVE

Develop an understanding of cultural food differences.

ASSESSMENT CRITERIA

Identify various origins of foods eaten in America.

ACTIVITIES & STRATEGIES

Define and discuss the following words with the class:

- ***ethnic group:*** a population of people having a common cultural heritage, as distinguished by customs, characteristics, language and a common history.
- ***cultural traditions:*** the handing down of stories, beliefs, and customs from generation to generation.
- ***customs:*** a social convention carried on by tradition.

Discuss the information in the opposite column with the students.

Brainstorm and list on the chalkboard ethnic foods that have been incorporated into the American diet.

Divide the class into groups of two or three. Inform the students that each group will be researching a particular food. They are to describe the food item and list the culture from which it came.

Use the ethnic foods listed on the chalkboard and supplement with these suggested food items: sourdough bread, New England clam chowder, empañada, chutney, pilaf, kielbasa, beef stroganoff, yogurt, shortbread, sauerkraut, black-eyed peas, sweet potato pie, dirty rice.

Allow time for each group to present and discuss its findings to the class.

Extension:
Instruct the students to write a paragraph telling about foods that they have eaten when they traveled or when they lived in other places.

RESOURCES & MATERIALS

Encyclopedias, dictionaries, cookbooks, text books, other sources of information found in the classroom or library

Teacher information

- For generations, families lived as neighbors. They developed various customs, adopted particular types of dress, and spoke a common language. These characteristics combine to make up a culture.
- Art, religion, and food are cultural expressions.
- Food customs are passed on from one generation to the next.
- Because different cultures have developed around the world, sometimes foods that are acceptable to one culture seem strange to people of other cultures. For example; snails, seaweed, raw fish, grasshoppers, and grubs are prized delicacies in some cultures.
- Eating these foods seems unusual to us, but people are influenced by their surroundings, and what they perceive as acceptable.
- Eating a hamburger for many Americans is a very acceptable thing to do, yet in cultures where cattle are considered sacred, eating beef is unthinkable.
- American culture is relatively new whereas cultural traditions in other parts of the world like Asia, Africa, and Europe can be traced back many centuries.
- Settlers brought their own food traditions and cultures and they have blended over the centuries with those of the Native Americans.
- This blending has created a uniquely American culture as evident in our food. American cuisine includes many ethnic foods as well as foods developed regionally.

ESSENTIAL ELEMENT

Social studies. Texas and United States history. Social and cultural developments of the United States. The students shall be provided opportunities to recognize the contributions of ethnic and racial groups and individuals to the development and growth of the United States.

LESSON OBJECTIVE

Investigate cultural influence on food in Texas.

ASSESSMENT CRITERIA

Create a newspaper article that reviews a fictitious French-Texas restaurant.

ACTIVITIES & STRATEGIES

Discuss the following information with the students:
- France flew the first flag over the territory of Texas.
- France reigned over the area only a short time, but the colonists were in Texas many years before and after that reign.
- The French applied their European cooking traditions to the foodstuffs found in Texas. This combination created a very distinct cuisine.
- Rice and shellfish became staples of the diet because they were plentiful along the swampy Gulf coast.
- The addition of corn into the diet can be traced to the influence of the Native Americans who came in contact with the French.
- Oyster stew, shrimp gumbo, and rice dishes, all combined with fish, were recipes used often because they were made from food items available to the settlers.
- The still-popular creole foods of the area resulted from a combination of French and Spanish cookery.

Distribute the handout, "French-Texan Menu."

Assign the students to act as food editors for their local newspaper. Tell them to review the local French-Texan restaurant and its menu described in the handout, "French-Texan Menu." They are to include a background of the people and the description of the food items they ate. The students may create and include:
- opinions of the taste and looks of the food item they ate
- a name for the restaurant
- descriptions of the decor of the restaurant
- opinions of the service
- ratings for the restaurant

Instruct students to use their textbooks, the handout, "French-Texan Menu," the information given in the discussion, encyclopedias, books, and any other resources in their review of the restaurant.

Social Studies **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

RESOURCES & MATERIALS

Handout: "French-Texan Menu"

"The Six Flags of Texas" resource information found at the beginning of the seventh/eighth grade *ESR IV* lesson plans

Textbooks
Encyclopedias

TEACHER TIP

Caution students that not all foods on the menu are healthy.

In advance, ask the cafeteria manager if French-Texan foods could be included in the school lunch menu.

ESSENTIAL ELEMENT

Social studies. Texas history and geography. Exportation and colonization of Texas. The student shall be provided opportunities to describe the history of the earliest inhabitants and settlers of Texas.

French-Texan Menu

Soups

- *Onion Soup consists of chicken broth base with onions and spices, sprinkled with croutons and grated cheese.*
- *Gumbo is a thick soup. Many cooks still add sassafras powder, called gumbo filé. It serves as a thickener. The herb was prepared by the Choctaw Indians by drying the leaves and crushing them into powder by pounding it with a stone mortar. Sometimes, okra can be used to thicken the gumbo in addition to, or instead of the filé.*
- *Creole Gumbo with Chicken and Oysters contains chicken and oysters, with salt pork, onion, gumbo filé, and other spices in oyster stock.*
- *Chicken and Sausage Gumbo is a thick soup with chicken, sausage, onions, parsley, and gumbo filé.*

Breads

- *New Year's Bread is a rich, sweet bread in the shape of a wreath.*
- *French Bread is a simple white bread.*
- *Lost Bread is a dry french bread that has been soaked in sweet milk and sugar, dipped in beaten egg, sugar, and lemon rind, then baked on a buttered cookie sheet.*

Vegetables

- *French Style Peas are cooked with lettuce and onion, and thickened with flour and butter.*
- *Squash with Almonds are zucchini in cream with almond halves.*

Side Dishes

- *Duchess Potatoes are cooked in egg, butter, and cream.*
- *Dirty Rice is cooked with ground giblets, green pepper, celery, and onion.*

Main Courses

- *Pork Pie is a meat pie with pork, green onions, and spices.*
- *Stuffed Ponse is pork stomach, stuffed with ground pork, bell pepper, bread, celery, and spices.*
- *Jambalaya is an example of how the French used several available foods to make one dish.*
- *Ham and Shrimp Jambalaya contains ham and shrimp cooked with green peppers, onions, and spices, and served over rice.*
- *Crab and Shrimp Jambalaya is a combination of crabmeat and shrimp cooked with celery, onion, and garlic, and served over rice.*

Desserts

- *Ambrosia consists of cut up oranges, bananas, strawberries, and fresh pineapple with grated coconut, sugar, and lemon juice.*
- *French cuisine has always included custard.*
- *Golden Cream Custard is an egg, sugar, and flour mixture flavored with lemon and vanilla.*

Coffee

To the French pioneers, coffee was not a luxury, but a necessity. They liked it strong with chicory, egg shell, and salt. Day coffee was consumed immediately after rising. Night coffee was a bit weaker and was drunk before going to bed.

- *Creme Au Café is coffee boiled with sweet cream, egg yolks, and powdered sugar.*

LESSON OBJECTIVE

Investigate new developments in food trends.

ASSESSMENT CRITERIA

Compare agriculture production of the past with the present.

Social Studies **Grades 7/8**

7/8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Present the information in the opposite column regarding American agriculture.

Ask the class to list reasons why there are fewer farmers today than there were in years past, yet food production has steadily increased.

Instruct the students to solve these math problems based on information given in the discussion:
- How much food does the average American consume in one day? (1400 divided by 365 = 3.8 pounds per day)
- How much money would a family making $20,000 per year spend on food? ($20,000 multiplied by 15% = $3000)

Define the following terms, and discuss their relevance in food production today:
- *Genetic engineering* is the transmission of genetic information into the cells of living organisms that does not normally occur in nature.
- *Hybrids* are new strains of plants created through cross-breeding. They are bred to produce particular strengths such as resistance to disease and drought.
- *Polyculture* refers to growing a variegated mixture of crops, for example, combining fruits and vegetables.
- *Aquaculture* refers primarily to the industry of fish farming, but also covers almost anything that can be raised in water.

Discuss with the students:
- Reasons that some food products that are available now were not available several years ago.
- What are some reasons these foods might be provided to the consumer?
- Speculate about agriculture in the future. Forecast the types and forms of foods that will be available to consumers in 25 years.

RESOURCES & MATERIALS

"American Agriculture Fact Sheet," *Nutrition, Food and Culture.* National Live Stock and Meat Board, Chicago, Ill. 60611

Information on American agriculture:
- Ninety percent of the American population was involved in farming at the time of the American Revolution.
- Two percent of the American population is involved in farming today. The rest of the population produces goods and services.
- Sixty percent of family income was spent on food at the time of the American Revolution. Less than fifteen percent of family income is spent on food today.
- Each American consumes about 1400 pounds of food each year. This has not changed in the last fifty years.
- In the 1700's, one farmer produced enough food to feed three people. Five people were fed by a farmer in 1860. In the 1900's, this increased to seven people. In 1972, 47 people were fed by one farmer. Today, one farmer produces enough food to feed 116 people.
- The increase in productivity is due partially to additional use of fertilizers, feed concentrates for livestock, and heavy farm equipment.

ESSENTIAL ELEMENT

Social studies. Texas and United States history. Economic development and growth of the United States. The student shall be provided opportunities to analyze the impact of technological innovations on business, industry, and agriculture.

LESSON OBJECTIVE

Examine ways to reduce intake of cholesterol.

ASSESSMENT CRITERIA

- Alter a recipe to reduce the intake of cholesterol.
- Determine the importance of reducing intake of cholesterol.

ACTIVITIES & STRATEGIES

Discuss the following information about cholesterol:

- *Cholesterol* is an odorless, soft, waxy substance found in every cell in the body. It is used to form cell membranes and certain types of hormones. It assists the body in manufacturing vitamin D. It also plays a role in digestion.
- People obtain *cholesterol* by eating foods that come from animals. The body manufactures cholesterol primarily in the liver.
- Two types of lipoproteins that are found in the body are high density lipoproteins (HDL) and low density lipoproteins (LDL).
- HDL, high density lipoproteins, carry excess cholesterol to the liver where it is processed into harmless substances. It is not found in foods. Low-fat diets and exercise tend to raise HDL levels.
- LDL also carries cholesterol. Some LDL takes cholesterol to the liver where it is removed. The rest of the LDL rides around in the bloodstream and carries cholesterol to the tissues to form cell membranes. If there is a high amount of LDL in the blood, some of the cholesterol is then deposited on the artery walls.
- When cholesterol is deposited on the artery walls, it leads to atherosclerosis.
- *Cardiovascular disease* is a term that covers all the diseases of the heart and blood vessels.
- *Atherosclerosis* is hardening of the arteries, characterized by a thickening of the artery walls with plaque. *Plaque* is lipid matter that accumulates on the inner walls of the arteries.
- Atherosclerosis leads to the closing or blocking of the arteries that supply blood to the heart and brain. Obstruction or blockage in the arteries can cause heart attacks and strokes.

Distribute and review the worksheet, "Health In, High Cholesterol Out" with the students. Allow time for completion, then ask students to share and discuss their original and altered recipes.

RESOURCES & MATERIALS

Worksheet: "Health In, High Cholesterol Out"

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

"Heart Challenges," American Heart Association Schoolsite Program, High School

Recipe books

Ways to reduce blood cholesterol levels:

1. Reduce total fat intake to 30 percent of total calories.
2. Include more whole grains in the daily diet.
3. Eat fish more often.
4. Increase consumption of fiber-rich fruits and vegetables.
5. Add varieties of legumes to the daily diet more often (dried beans and peas, soybeans)
6. Include nonfat or low-fat milk and milk products every day.
7. Reduce the cholesterol-rich foods in the diet (organ meats, egg yolks, shellfish, and fatty red meats).

In advance, ask the cafeteria manager to discuss with the class the new USDA recommendations and how fat is reduced in school meals.

ESSENTIAL ELEMENT

Vocational and applied technology education. Food science and nutrition. Concepts and skills related to nutrition. The student shall be provided opportunities to assess long term effects of food choices on health.

NAME ______________________________ **DATE** ______________

Health In, High Cholesterol Out

Instructions

Look through a recipe book and choose a recipe that needs to be altered to reduce the amount of cholesterol and fat. Use the following guidelines to help you choose the recipe and make the necessary changes to convert it to a healthier food item. In order to achieve a low-fat diet, it is important to follow these few simple guidelines:

- Read labels to learn the fat content of foods.
- Choose to bake, broil, braise, or steam foods; eliminate frying.
- Refrigerate soups and stews before serving. Skim off hardened fat.
- Reduce intake of high-fat desserts.
- Reduce consumption of bacon, sausage, and luncheon meats.
- Use herbs, spices, and lemon juice to season and flavor foods.
- Choose canned fish products packed in water.
- Try using low-fat, low-calorie salad dressings.
- Use nonstick sprays in frying pans before sautéing.
- Choose low-fat or fat-free menu items and snack foods.
- Skin poultry and trim visible fat from lean meats.
- Use vegetable protein sources such as lentils, dried beans, and peas.
- Use low-fat and nonfat dairy products.
- Reduce total dietary fat intake.

Original Recipe

Altered Recipe

Follow up question

If you had a cholesterol level that was considered dangerously high, how would you convince yourself to alter your food intake so that you could lower your cholesterol level?

3 9

Vocational Education

Grades 7/8

7/8

TEXAS EDUCATION AGENCY

LESSON OBJECTIVE

List strategies for reducing the amount of sugar in the diet.

ASSESSMENT CRITERIA

- Create a brochure or a flyer stating the advantages of moderating sugar in the diet and ways to accomplish this.
- Distribute the brochure in the cafeteria and other appropriate places.

ACTIVITIES & STRATEGIES

Discuss the following information with the students regarding sugar in the diet:

- The average American consumes an estimated sixty to eighty pounds of sugar a year. That is approximately one-fourth pound of sugar per day.
- One reason for this high intake of sugar may be the amount of hidden sugar found in convenience food items which are not normally thought of as sweets.
- Too much sugar in the diet contributes to obesity.
- Too much sugar in the diet contributes to tooth decay. Foods high in sugar create a perfect climate in the mouth for the growth of the bacteria that destroys tooth enamel and causes tooth decay.
- Names for sugar which are seen on food labels include brown sugar, confectioner's sugar, corn sweeteners, syrup, dextrose, granulated sugar, high-fructose corn sweeteners, honey, molasses, and natural sugar.
- Consumers must learn to identify sugar in their diets.
- It is recommended that people reduce their intake of simple carbohydrates to 10 percent of their total calorie intake.

Instruct students to create a flyer or a brochure which advertises the strategies and benefits of reducing sugar in the diet. The students should use the information given in the class discussion. They may add graphics, bold words, change fonts, or use whatever the computer software allows to enhance the product.

Assist students in listing some areas in the school where the brochures could be distributed. Ask students to explain why these locations would be ideal for dispersion of the brochure keeping in mind the characteristics of the people who would receive the information (sex, age group, health status, or financial status).

RESOURCES & MATERIALS

Computer, with word processing program or desk top publishing program

TEACHER TIPS

Strategies for moderating the amount of sugar in the diet include

1. **Select 100 percent real fruit juices rather than soft drinks or fruit drinks.**
2. **Choose unsweetened cereals rather than the presweetened varieties. Learn to read the labels for sugar content.**
3. **Eat fruits canned in natural juices rather than in heavy syrups.**
4. **Reduce intake of "empty calorie" foods. Empty calorie foods contain calories but little or no nutritional value, such as soft drinks.**
5. **Select fresh fruits for snacks. The sugar content of dried fruits is much higher.**
6. **Replace some of the sugar in recipes by using the sweet spices—allspice, cardamom, cinnamon, cloves, coriander, ginger, and nutmeg.**

In advance, check with the cafeteria manager for help in the distribution of flyers in the cafeteria.

ESSENTIAL ELEMENT

Vocational and applied technology education. Computer literacy. Use of the computer as a tool. The student shall be provided opportunities to use software packages in a variety of applications (word processing, filing, spread sheets, data-base manipulation, information retrieval, etc.)

LESSON OBJECTIVE

Evaluate dietary needs of women during pregnancy and lactation.

ASSESSMENT CRITERIA

- Identify the special need for iron in certain diets.
- Name ways to achieve iron requirements in the diet.
- Evaluate nutritive iron values of selected foods.

Vocational Education

Grades 7/8

7/8

TEXAS EDUCATION AGENCY

ACTIVITIES & STRATEGIES

Iron is found in every cell, not only of the human body but of all living things, both plant and animal. In the human body, iron is used to help transfer oxygen in the red blood cells. The majority of iron is lost whenever blood is lost. Menstruation makes a woman's need for iron twice that of a man's, but anyone who loses blood loses iron.

Nutrition surveys show that low iron levels in pregnant and lactating women, infants, and teenagers is a common problem.

Define ***anemia***: a condition in which a person has a deficiency in the number of red blood cells and the body tissues do not receive enough oxygen.

Discuss desirable ways to increase iron levels in the diet.
- Eating iron-rich foods such as:
  - red meat
  - dried beans
  - peanuts/peanut butter
  - green peas
  - dried fruits (figs, apricots, raisins, prunes)
  - strawberries
  - dark green leafy vegetables
  - whole grain breads and cereals
- Feed iron-fortified formula and cereals to infants.
- Use cast-iron skillets in cooking. The iron from the skillet can be used by the body. For example, 100 grams of spaghetti sauce simmered in a glass dish has 3 mg. of iron; the same sauce simmered in a cast-iron skillet has 87 mg. of iron.
- Eat foods that contain vitamin C (ascorbic acid) at each meal. Vitamin C more than doubles iron absorption from food.
- Iron pills are not a good idea without medical consent.
  - The body stores iron; too much can cause toxic build-up.
  - Some pill-form iron may cause constipation, diarrhea, or stained teeth.

Distribute the worksheet, "Iron Skill-ets." Tell students to evaluate each food listed according to iron content by using the transparency made from "Appendix E: Food Composition Table." After completion, review the answers on the worksheeet with the class.

RESOURCES & MATERIALS

Worksheet: "Iron Skill-ets"

Transparency or handout made from "Appendix E: Food Composition Table"

Life Management Skills Curriculum Guide, Home Economics Curriculum Center, Texas Tech University, P.O. Box 4067, Lubbock, TX 79409-1161

Overhead projector

ANSWER KEY

1. 8.1 2. 3.2 3. 2.96 4. 3.03 5. 4.47 6. 3.21 7. 4.84 8. .13 9. 0 10. 2.6 11. 6.58 12. 1.08 Questions: 1. a hamburger 2. .13 3. raisins 4. it has raisins and is enriched.

ESSENTIAL ELEMENT

Vocational and applied technology education. Life management skills. Concepts and skills for achieving optimum personal health and appearance. The student shall be provided opportunities to apply principles of good nutrition and relate good health practices to personal well-being and achievement.

NAME ________________________________ **DATE** ______________

Iron Skill-ets

Test your skill at finding the iron content of the selected foods below by using the Food Composition Table.

FOOD	SERVING SIZE	IRON (mg.) Fill in the blanks.
1. bran flakes	3/4 cup	1.
2. blackstrap molasses	1 tbsp.	2.
3. ground beef, extra lean	3.5 oz.	3.
4. prune juice	8 oz.	4.
5. pinto beans	1 cup, boiled	5.
6. spinach	1/2 cup	6.
7. fast food hamburger	1 sandwich, 4 oz. meat	7.
8. cola	12 oz.	8.
9. candy bar	2 oz. bar	9.
10. raisins	2/3 cup	10.
11. enriched oatmeal with raisins	1 pkg., prepared	11.
12. oatmeal, plain, quick	2/3 cup, cooked	12.

Questions:

1. When you eat at a fast food restaurant, what would be a high-iron choice of food?
2. How much iron do you get with an after school snack of a candy bar and a cola?
3. What snack food would provide more iron?
4. Why does food item number eleven contain so much more iron than food item number twelve?

LESSON OBJECTIVE

Distinguish between reliable and unreliable sources of nutrition information.

ASSESSMENT CRITERIA

Compose questions to ask a representative of an organization that provides nutrition information.

ACTIVITIES & STRATEGIES

Discuss sources of reliable nutrition information with the students:
- A variety of resources are available to provide the consumer with reliable nutrition information. Due to the enormous amount of diet and nutrition information presented by the media, it is sometimes difficult for consumers to distinguish fact from fallacy.
- It is important to depend on reliable sources for nutrition information when studying this subject.

Invite a representative from one of the organizations listed in the "Sources of Reliable Nutrition Information" in the "Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV.*

Instruct the students to prepare a list of questions for the representative prior to the visit. The following is a list of sample questions:
- What needs led to the formation of the organization?
- What is the organization's primary purpose or target audience?
- What are the services provided by your organization?
- How accessible is your organization?
- How can we as students benefit from the nutrition information provided by this organization?
- What needs do you foresee your organization addressing in 10 or 25 years?
- What changes has the organization made in helping or improving local/state/national nutritional information or standard?

Follow-up activities:
- Write an essay which summarizes the discussion held with the representative.
- Write a news story based on the interview and include a title for the school newspaper.

RESOURCES & MATERIALS

Guest representative

"Instructor's Resource Guide for Teaching Nutrition Education" found in the introductory section of *ESR IV*

ESSENTIAL ELEMENT

Vocational and applied technology education. Career investigation. Concepts and skills related to career opportunities. The student shall be provided opportunities to gain a realistic perception of the world of work by visiting worksites (optional) and by discussions and interviews with representatives of business, industry, and the professions who visit the classrooms.

Appendix A
Suggested Teacher Resources

Books

American Heart Association Cookbook. 5th ed. Dallas: American Heart Association, 1991.

Archer, G.A., Psy.D. *Big Kids: A Parent's Guide to Weight Control for Children*. Oakland: New Harbinger Publications, Inc., 1989.

Avis, J.B., L.D.N., R.D., and Ward, K.F., L.D.N., R.D. *Just for Kids Cookbook*. West Monroe, LA: Central Printers and Publishers, 1990.

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Boskind-White, M., Ph.D., and White, Jr. W.C., Ph.D. *The Binge/Purge Cycle*. 2nd ed. New York, NY: Norton, 1987.

Cooper, N., R.D. *The Joy of Snacks*. Minnetonka, MN: DCI Publishing, 1991.

Eisenman, P.A., Ph.D., Johnson, S.C., Ph.D., and Benson, J.E., M.S. *Coaches Guide to Nutrition and Weight Control*. Champaign, IL: Leisure Press, 1990.

Franz, M.J., M.S., R.D. *Fast Food Facts*. Minnetonka, MN: DCI Publishing, 1990.

Gershoff, S., Ph.D., and Whitney, C. *The Tufts University Guide to Total Nutrition*. New York: HarperPerennial, 1990.

Grundy, S., M.D., Ph.D. *American Heart Association Low-Fat Low-Cholesterol Cookbook: An Essential Guide for Those Concerned about Their Cholesterol Levels*. New York: Random, 1989.

Hall, L., and Cohn, L. *Bulimia: A Guide to Recovery*. Carlsbad, CA: Gurze Books, 1986.

Hess, M.A., M.S., R.D., Hunt, A.E., and Stone, B.M. *A Healthy Head Start: A Worry-free Guide to Feeding Young Children*. New York: Henry Holt and Company, 1991.

Hirschmann, J.R., and Munter, C.H. *Overcoming Overeating*. New York: Fawcett, 1988.

Jacobson, M.S., Ph.D., and Hill, L., R.D. *Kitchen Fun for Kids*. New York: Henry Holt and Company, 1991.

Linsay, A. *The American Cancer Society Cookbook: A Menu for Good Health*. New York: Hearst Books, 1988.

Manahan, L., M.S., M.Ed., R.D. *The Adventures of Superbean and the Good Food Friends*. Walla Walla, WA: Yummy Designs, 1988.

Manahan, L., M.S., M.Ed., R.D. *The Good Food Puppets Come Alive!* Walla Walla, WA: Yummy Designs, 1990.

Mellin, L., M.A., R.D. *Shapedown: Weight Management Program for Adolescents.* San Francisco: Balboa Publishing, 1983.

Mond, A., R.D., and Franz, M.J., M.S., R.D. *Convenience Food Facts.* Minnetonka, MN: DCI Publishing, 1987.

Niethammer, C. *American Indian Food and Lore.* New York: Collier Books, Macmillan Publishing Company, 1974.

Pennington, J., Ph.D., R.D. *Bowes and Church's Food Values of Portions Commonly Used.* Philadelphia: J.B. Lippincott Company, 1989.

Romaniello, C., M.P.H., R.D., and Van Domelen, N. *Off to a Good Start.* Englewood, CO: Wildwood Resources Publishing, 1989.

Sacker, I.M., M.D., and Zimmer, M.A., Ph.D. *Dying to Be Thin.* New York: Warner Books, Inc., 1987.

Satter, E., M.S., R.D. *Child of Mine: Feeding with Love and Food Sense.* Menlo Park, CA: Bull Publishing Company, 1986.

Satter, E., R.D., A.C.S.W. *How to Get Your Kid to Eat...But Not Too Much.* Palo Alto, CA: Bull Publishing Company, 1987.

Smith, J. *The Frugal Gourmet on Our Immigrant Ancestors.* New York: William Morrow and Company, Inc., 1990.

Stanush, B.E. *Texans: A Story of Texas Cultures for Young People.* San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1988.

Stark, R.D., M.D., and Winston, M., Ed.D., R.D. *American Heart Association Low-Salt Cookbook: A Complete Guide to Reducing Sodium and Fat in the Diet.* New York: Random, 1990.

Stein, P.M., R.D., and Unell, B. *Anorexia Nervosa: Finding the Lifeline.* Minneapolis: CompCare, 1986.

Tannahill, R. *Food in History.* New York: Crown Publishers, Inc., 1988.

The American Diabetes Association/The American Dietetic Association Family Cookbook. Vol. IV. New York: Prentice Hall, 1991.

The Danish Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987.

The English Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987.

The German Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987.

The Irish Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987.

The Japanese Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987.

The Melting Pot. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1989.

The Polish Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987.

The Wendish Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987.

Tribole, E., M.S., R.D. *Eating on the Run*. Champaign, IL: Human Kinetics, 1987.

Valette, B. *A Parent's Guide to Eating Disorders*. New York: Walker Publishing Company, 1988.

Visser, M. *Much Depends on Dinner*. New York: Collier Books, Macmillan Publishing Company, 1986.

Warner, P. *Healthy Snacks for Kids*. San Jacinto, CA: Bristol Publishing Company, 1989.

Zeller, P., and Jacobson, M.F., Ph.D. *Eat, Think, and Be Healthy!* Washington, DC: Center for Science in the Public Interest, 1987.

Pamphlets

The Texians and the Texans. San Antonio: The University of Texas Institute of Texan Cultures at San Antonio, 1987. A series of pamphlets dealing with the many peoples who have contributed to the history and heritage of Texas which include the following:

- *The Afro-American Texans*
- *The Belgian Texans*
- *The Chinese Texans*
- *The Czech Texans*
- *The German Texans*
- *The Greek Texans*
- *The Indian Texans*
- *The Italian Texans*
- *The Jewish Texans*
- *The Mexican Texans*
- *Los Tejanos Mexicanos* (Spanish version)
- *The Norwegian Texans*
- *The Spanish Texans*
- *The Swiss Texans*

Curriculum Kits

Food...Early Choices. Rosemont, IL: National Dairy Council, 1988.

Food Helps Me Grow, Grade 1. Rosemont, IL: National Dairy Council, 1988.

Food Gives Me Energy, Grade 2. Rosemont, IL: National Dairy Council, 1988.

Food Keeps Me Healthy, Grade 3. Rosemont, IL: National Dairy Council, 1988.

Food in America, Grade 4. Rosemont, IL: National Dairy Council, 1988.

Food and Technology, Grade 5. Rosemont, IL: National Dairy Council, 1988.

Food Decisions, Grade 6. Rosemont, IL: National Dairy Council, 1988.

Smart Moves, Grades 7-12. Rosemont, IL: National Dairy Council, 1991.

Food Power: A Coach's Guide to Improving Performance. 2nd ed. Rosemont, IL: National Dairy Council, 1991.

Healthy Choices: Balanced Meals Nutrition Education Program, Grade 2. Los Angeles: Dairy Council of California, 1990.

Daily Food Choices Secrets of Success Nutrition Education Program, Grades 4-5. Los Angeles: Dairy Council of California, 1981.

Nutrition, Food, and Culture. Chicago: National Live Stock and Meat Board, 1985.

Changing the Course, Lower Elementary. American Cancer Society, Inc., 1990.

Changing the Course, Upper Elementary. American Cancer Society, Inc., 1990.

Changing the Course, Intermediate. American Cancer Society, Inc., 1990.

Changing the Course, Secondary. American Cancer Society, Inc., 1990.

Changing the Course, School Foodservice Providers. American Cancer Society, Inc., 1990.

The Heart Treasure Chest. Austin: American Heart Association, Texas Affiliate, Inc., 1984.

Heart Explorers, Grade 1. Austin: American Heart Association, Texas Affiliate, Inc., 1987.

Heart Explorers, Grade 2. Austin: American Heart Association, Texas Affiliate, Inc., 1987.

Heart Explorers, Grade 3. Austin: American Heart Association, Texas Affiliate, Inc., 1987.

Getting to Know Your Heart, Lower Elementary. Dallas: American Heart Association Schoolsite Program, projected 1992.

Getting to Know Your Heart, Upper Elementary. Dallas: American Heart Association Schoolsite Program, 1989.

Heart Decisions, Middle School. Dallas: American Heart Association Schoolsite Program, 1989.

Heart Challenges, High School. Austin: American Heart Association, Texas Affiliate, Inc., 1989.

Project TEACH. Austin: Texas Department of Agriculture, 1991.

Videos

The following videos are available from the NET library at the following address:

Nutrition Education and Training Program
Texas Department of Human Resources
The Library 434-W
701 West 51st Street
P.O. Box 2960
Austin, Texas 78769
(512) 450-3530

Anorexia Nervosa: The Covert Rebellion gives an overview of the problem of anorexia nervosa, the psychology of eating, parent-child relationships, and distorted self-image. Appropriate for high school students.

Be Fair to Your Food tells how to protect food from unnecessary loss of nutrients through proper shopping, storing, and cooking. Appropriate for junior high and senior high school students.

Be Healthy, Be Happy emphasizes health rules of keeping clean, eating proper foods, getting enough rest and exercise, and taking care of yourself when you are sick and also shows the relationship of proper eating habits to staying healthy. Appropriate for prekindergarten through grade 3.

Bloodstream explores the role of arteries, veins, capillaries, nutrition, and the heart in the process of blood circulation. Appropriate for junior high and senior high school students.

Bulimia: Out of Control Eating discusses bulimia as a life threatening eating disorder. Appropriate for junior high and senior high school students.

Chef Good Munch Series uses puppets and humor to promote learning and induce positive changes in children's attitudes about vegetables. Appropriate for kindergarten through grade 4.

Cholesterol: What You Can Do discusses the link between a high blood cholesterol level and heart disease and provides information on cholesterol, lipoproteins, plaque build-up in arteries, and types of fat. Appropriate for grades 6 through 12.

Fast Food: What's in It for You gives information on nutrient content of fast foods and healthful alternatives. Appropriate for upper elementary, junior high, and senior high school students.

Fear of Fat: Dieting and Eating Disorders discusses eating disorders, including anorexia nervosa, compulsive overeating, and bulimia. Appropriate for grades 6 through 12.

Feeding shows the actual process of the human digestive system, beginning with food entering the mouth and ending with waste elimination. Appropriate for junior high and senior high school students.

Food and Growth introduces the concept that growth occurs by cell division and that food reaching the cells is necessary. Appropriate for grades 4 through 8.

Food Energy and You explains how the body uses energy and how food is a source of energy. Appropriate for grades 6 through 12.

Food: Keep It Safe to Eat presents basic information on food safety such as proper shopping methods, kitchen hygiene, safe defrosting, and food preparation tips. Appropriate for grades 6 through 12.

Health: Food and Nutrition covers the basics of proper nutrition and the importance of major nutrients. Appropriate for elementary school students.

Lunchroom Etiquette is filmed in an elementary school lunchroom and asks children to discuss their lunchtime environment and make suggestions for improvement. Appropriate for elementary school students.

Supermarket Savy covers techniques for wise consumer buying to enable students to learn how to get the most nutritious food for their money. Appropriate for upper elementary and middle school students.

Time for Table Manners uses Disney animation to show young children how to eat meals using good manners; includes washing before eating, setting the table, using eating utensils, cleaning up, and saying "please" and "thank you." Appropriate for grades 4 through 8.

Your Diet discusses carbohydrates, exercise, fats, fiber, salt/hypertension, and water. Appropriate for grades 6 through 12.

Appendix B

Bibliography

Books

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Changing the Course, Upper Elementary. American Cancer Society, Inc., 1990.

Changing the Course, Intermediate. American Cancer Society, Inc., 1990.

Changing the Course, Secondary. American Cancer Society, Inc., 1990.

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The Heart Treasure Chest. Austin: American Heart Association, Texas Affiliate, Inc., 1984.

Heart Explorers, Grade 1. Austin: American Heart Association, Texas Affiliate, Inc., 1987.

Heart Explorers, Grade 2. Austin: American Heart Association, Texas Affiliate, Inc., 1987.

Heart Explorers, Grade 3. Austin: American Heart Association, Texas Affiliate, Inc., 1987.

Getting to Know Your Heart, Lower Elementary. Dallas: American Heart Association Schoolsite Program, projected 1992.

Getting to Know Your Heart, Upper Elementary. Dallas: American Heart Association Schoolsite Program, 1989.

Heart Decisions, Middle School. Dallas: American Heart Association Schoolsite Program, 1989.

Heart Challenges, High School. Austin: American Heart Association, Texas Affiliate, Inc., 1989.

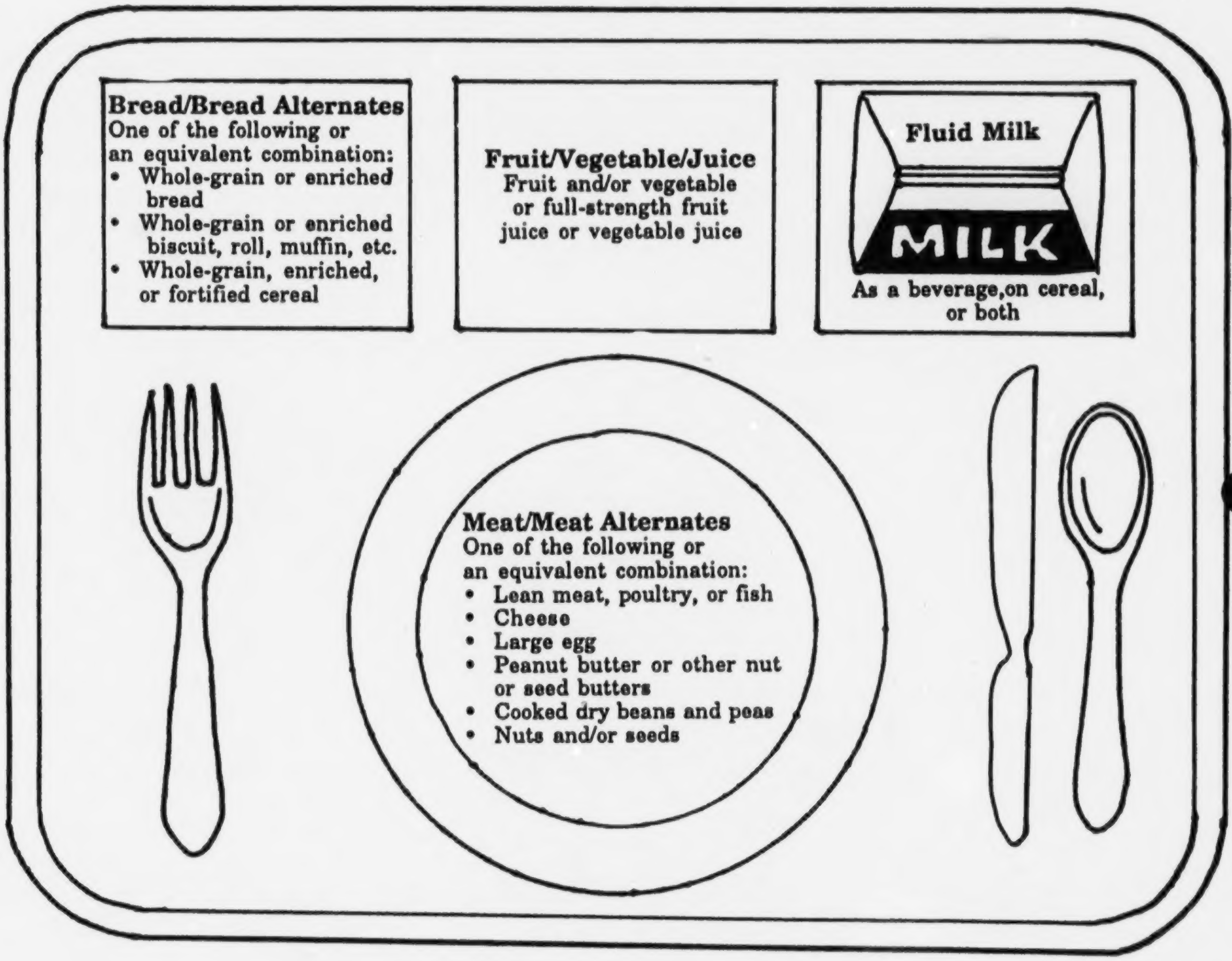
Appendix C: A Pattern for Daily Food Choices

FOOD GROUPS	SUGGESTED DAILY SERVINGS	WHAT EQUALS A SERVING?
Vegetables • Dark green leafy • Deep yellow • Starchy • Other vegetables	**3 - 5** servings from entire group (Include all types regularly; use dark green leafy vegetables and deep yellow vegetables several times a week.)	▲ 1/2 cup of cooked vegetables ▲ 1/2 cup of chopped raw vegetables ▲ 1 cup of leafy raw vegetables, such as lettuce or spinach
Fruits • Citrus, melon, berries • Other fruits	**2 - 4** servings from entire group	▲ a whole fruit such as a medium apple, banana, or orange ▲ a grapefruit half ▲ a melon wedge ▲ 3/4 cup of juice ▲ 1/2 cup of berries ▲ 1/2 cup cooked or canned fruit ▲ 1/4 cup dried fruit
Breads, Cereals, Rice, and Pasta • Whole-grain • Enriched	**6 -11** servings from entire group (Include several servings of whole-grain products daily.)	▲ 1 slice of bread ▲ 1/2 hamburger bun, English muffin, or bagel ▲ a small roll, biscuit, or muffin ▲ 3 to 4 small or 2 large crackers ▲ 1/2 cup cooked cereal, rice, or pasta ▲ 1 ounce of ready-to-eat breakfast cereal ▲ 1 tortilla or pancake
Milk, Yogurt, and Cheese	**2** servings for adults **3** servings for children **4** servings for ages 11-24 (3 servings for women who are pregnant or breast-feeding and for teens; 4 servings for teens who are pregnant or breast-feeding)	▲ 1 cup of low-fat milk ▲ 8 ounces low-fat yogurt ▲ 1 1/2 ounces of low-fat natural cheese ▲ 2 ounces low-fat process cheese
Meat, Poultry, Fish, Dry beans and Peas, Eggs, Nuts, and Seeds	**2 - 3** servings from entire group (Include dry beans and peas often.)	▲ 2 - 3 ounces equals one serving of cooked lean meat, poultry, or fish. Count 1 egg, 1/2 cup cooked dried beans, or 2 T. peanut butter as 1 ounce of meat.

Adapted from: Nutrition and Your Health: Dietary Guidelines for Americans, United States Departments of Agriculture and Health and Human Services, U.S. Government Printing Office, 1750 K Street, N. W., Washington, DC, 20006, 1990.

Appendix C

The School Breakfast Pattern



Bread/Bread Alternates

One of the following or an equivalent combination:

- Whole-grain or enriched bread
- Whole-grain or enriched biscuit, roll, muffin, etc.
- Whole-grain, enriched, or fortified cereal

Fruit/Vegetable/Juice

Fruit and/or vegetable or full-strength fruit juice or vegetable juice

Fluid Milk

As a beverage,on cereal, or both

Meat/Meat Alternates

One of the following or an equivalent combination:

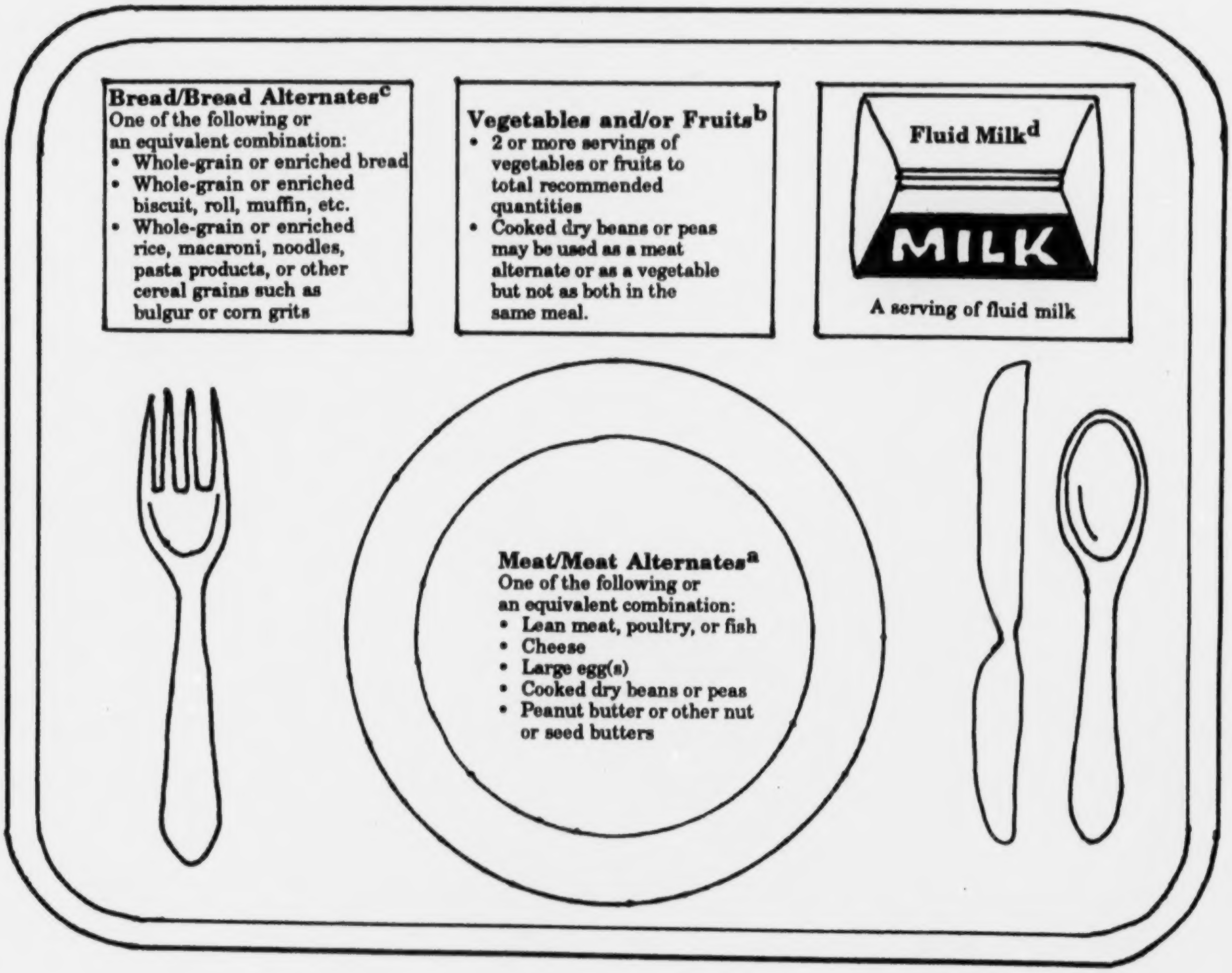
- Lean meat, poultry, or fish
- Cheese
- Large egg
- Peanut butter or other nut or seed butters
- Cooked dry beans and peas
- Nuts and/or seeds

One serving of milk and one serving of fruit and/or vegetable or full-strength fruit juice or vegetable juice are required.

Students may select one serving from Bread/Bread Alternates and one serving from Meat/ Meat Alternates, or they may select two servings from either Bread/Bread Alternates or Meat/ Meat Alternates.

Appendix C

The School Lunch Pattern



Bread/Bread Alternates[c]
One of the following or
an equivalent combination:
- Whole-grain or enriched bread
- Whole-grain or enriched biscuit, roll, muffin, etc.
- Whole-grain or enriched rice, macaroni, noodles, pasta products, or other cereal grains such as bulgur or corn grits

Vegetables and/or Fruits[b]
- 2 or more servings of vegetables or fruits to total recommended quantities
- Cooked dry beans or peas may be used as a meat alternate or as a vegetable but not as both in the same meal.

Fluid Milk[d]

A serving of fluid milk

Meat/Meat Alternates[a]
One of the following or
an equivalent combination:
- Lean meat, poultry, or fish
- Cheese
- Large egg(s)
- Cooked dry beans or peas
- Peanut butter or other nut or seed butters

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[a] Peanuts, soy nuts, tree nuts, or seeds meet no more than 50% of the requirement and must be combined in the meal with at least 50% of other meat or meat alternate. (1 oz. of nuts/seeds is equal to 1 oz. of cooked lean meat, poultry, or fish.)

[b] No more than 1/2 of the total requirement may be met with full-strength fruit or vegetable juice.

[c] Enriched macaroni with fortified protein may be used as a meat alternate or as a bread alternate but not as both in the same meal.

[d] Whole milk and unflavored low-fat milk must be offered. This requirement does not prohibit offering other milk, such as flavored milk or skim milk, along with the above.

Appendix D

Food and Nutrition Board, National Academy of Sciences – National Research Council Recommended Dietary Allowances[a]

							Fat-Soluble Vitamins				Water-Soluble Vitamins							Minerals						
Category	**Age (years) or Condition**	**Weight (kg)**	**Weight (lb)**	**Height (cm)**	**Height (in)**	**Protein (g)**	**Vitamin A (μg R.E.)[b]**	**Vitamin D (μg)[c]**	**Vitamin E (mg α-T.E.)[d]**	**Vitamin K (μg)**	**Vitamin C (mg)**	**Thiamin (mg)**	**Riboflavin (mg)**	**Niacin (mg N.E.)[e]**	**Vitamin B$_6$ (mg)**	**Folate (μg)**	**Vitamin B$_{12}$ (μg)**	**Calcium (mg)**	**Phosphorus (mg)**	**Magnesium (mg)**	**Iron (mg)**	**Zinc (mg)**	**Iodine (μg)**	**Selenium (μg)**
Infants	0.0-0.5	6	13	60	24	13	375	7.5	3	5	30	0.3	0.4	5	0.3	25	0.3	400	300	40	6	5	40	10
	0.5-1.0	9	20	71	28	14	375	10	4	10	35	0.4	0.5	6	0.6	35	0.5	600	500	60	10	5	50	15
Children	1-3	13	29	90	35	16	400	10	6	15	40	0.7	0.8	9	1.0	50	0.7	800	800	80	10	10	70	20
	4-6	20	44	112	44	24	500	10	7	20	45	0.9	1.1	12	1.1	75	1.0	800	800	120	10	10	90	20
	7-10	28	62	132	52	28	700	10	7	30	45	1.0	1.2	13	1.4	100	1.4	800	800	170	10	10	120	30
Males	11-14	45	99	157	62	45	1,000	10	10	45	50	1.3	1.5	17	1.7	150	2.0	1,200	1,200	270	12	15	150	40
	15-18	66	145	176	69	59	1,000	10	10	65	60	1.5	1.8	20	2.0	200	2.0	1,200	1,200	400	12	15	150	50
	19-24	72	160	177	70	58	1,000	10	10	70	60	1.5	1.7	19	2.0	200	2.0	1,200	1,200	350	10	15	150	70
	25-50	79	174	176	70	63	1,000	5	10	80	60	1.5	1.7	19	2.0	200	2.0	800	800	350	10	15	150	70
	51+	77	170	173	68	63	1,000	5	10	80	60	1.2	1.4	15	2.0	200	2.0	800	800	350	10	15	150	70
Females	11-14	46	101	157	62	46	800	10	8	45	50	1.1	1.3	15	1.4	150	2.0	1,200	1,200	280	15	12	150	45
	15-18	55	120	163	64	44	800	10	8	55	60	1.1	1.3	15	1.5	180	2.0	1,200	1,200	300	15	12	150	50
	19-24	58	128	164	65	46	800	10	8	60	60	1.1	1.3	15	1.6	180	2.0	1,200	1,200	280	15	12	150	55
	25-50	63	138	163	64	50	800	5	8	65	60	1.1	1.3	15	1.6	180	2.0	800	800	280	15	12	150	55
	51+	65	143	160	63	50	800	5	8	65	60	1.0	1.2	13	1.6	180	2.0	800	800	280	10	12	150	55
Pregnant						60	800	10	10	65	70	1.5	1.6	17	2.2	400	2.2	1,200	1,200	320	30	15	175	65
Lactating	1st Six Months					65	1,300	10	12	65	95	1.6	1.8	20	2.1	280	2.6	1,200	1,200	355	15	19	200	75
	2nd 6 Months					62	1,200	10	11	65	90	1.6	1.7	20	2.1	260	2.6	1,200	1,200	340	15	16	200	75

[a] The allowances, expressed as average daily intakes over time, are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined.

[b] Retinol equivalents. 1 retinol equivalent = 1 μg retinol or 6μg β-carotene.

[c] As cholecalciferol. 10 μg cholecalciferol = 400 I.U. of vitamin D.

[d] α-Tocopherol equivalents. 1 mg d-α tocopherol = 1 α-TE.

[e] 1 N.E. (niacin equivalent) is equal to 1 mg of niacin or 60 mg of dietary tryptophan.

Adapted from *Recommended Dietary Allowances, 10th Edition*, c. 1989 by the National Academy of Sciences. Published by National Academy Press, Washington, D.C.

Appendix D

Median Heights and Weights and Recommended Energy Intake

Category	Age (years) or Condition	Weight (kg)	Weight (lb)	Height (cm)	Height (in)	REE[a] (kcal/day)	Average Energy Allowance (kcal)[b]		
							Multiples of REE	Per kg	Per day[c]
Infants	0.0-0.5	6	13	60	24	320		108	650
	0.5-1.0	9	20	71	28	500		98	850
Children	1-3	13	29	90	35	740		102	1,300
	4-6	20	44	112	44	950		90	1,800
	7-10	28	62	132	52	1,130		70	2,000
Males	11-14	45	99	157	62	1,440	1.70	55	2,500
	15-18	66	145	176	69	1,760	1.67	45	3,000
	19-24	72	160	177	70	1,780	1.67	40	2,900
	25-50	79	174	176	70	1,800	1.60	37	2,900
	51+	77	170	173	68	1,530	1.50	30	2,300
Females	11-14	46	101	157	62	1,310	1.67	47	2,200
	15-18	55	120	163	64	1,370	1.60	40	2,200
	19-24	58	128	164	65	1,350	1.60	38	2,200
	25-50	63	138	163	64	1,380	1.55	36	2,200
	51+	65	143	160	63	1,280	1.50	30	1,900
Pregnant	1st trimester								+0
	2nd trimester								+300
	3rd trimester								+300
Lactating	1st Six Months								+500
	2nd 6 Months								+500

[a] Calculation of REE (Resting Energy Expenditure) based on FAO equations, then rounded.
[b] In the range of light to moderate activity, the coefficient of variation is ±20%.
[c] Figure is rounded.

Estimated Safe and Adequate Daily Dietary Intakes of Selected Vitamins and Minerals[a]

Category	Age (years)	Vitamins		Trace Elements[b]				
		Biotin (μg)	Pantothenic Acid (mg)	Copper (mg)	Manganese (mg)	Fluoride (mg)	Chromium (μg)	Molybdenum (μg)
Infants	0.0-0.5	10	2	0.4-0.6	0.3-0.6	0.1-0.5	10-40	15-30
	0.5-1.0	15	3	0.6-0.7	0.6-1.0	0.2-1.0	20-60	20-40
Children and Adolescents	1-3	20	3	0.7-1.0	1.0-1.5	0.5-1.5	20-80	25-50
	4-6	25	3-4	1.0-1.5	1.5-2.0	1.0-2.5	30-120	30-75
	7-10	30	4-5	1.0-2.0	2.0-3.0	1.5-2.5	50-200	50-150
	11+	30-100	4-7	1.5-2.5	2.0-5.0	1.5-2.5	50-200	75-250
Adults		30-100	4-7	1.5-3.0	2.0-5.0	1.5-4.0	50-200	75-250

[a] Because there is less information on which to base allowances, these figures are not given in the main table of RDA and are provided here in the form of ranges of recommended intakes.
[b] Since the toxic levels for many trace elements may be only several times usual intakes, the upper levels for the trace elements given in this table should not be habitually exceeded.

Estimated Sodium, Chloride, and Potassium Minimum Requirements of Healthy Persons[a]

	Age	Weight (kg)[a]	Sodium (mg)[a,b]	Chloride (mg)[a,b]	Potassium (mg)[c]
Mths	0-5	4.5	120	180	500
	6-11	8.9	200	300	700
Years	1	11.0	225	350	1,000
	2-5	16.0	300	500	1,400
	6-9	25.0	400	600	1,600
	10-18	50.0	500	750	2,000
	>18[d]	70.0	500	750	2,000

[a] No allowance has been included for large, prolonged loses from the skin through sweat.
[b] There is no evidence that higher intakes confer any health benefit.
[c] Desirable intakes of potassium may considerably exceed these values (3,500 mg for adults).
[d] No allowance included for growth. Values for those below 18 years assume a growth rate at the 50th percentile reported by the National Center for health Statistics (Hamill et al., 1979 in reference 1) and averaged for males and females.

Adapted from *Recommended Dietary Allowances, 10th Edition*, c. 1989 by the National Academy of Sciences. Published by National Academy Press, Washington, D.C.

Appendix E: Food Composition Table

FOODS	WT (g)	KCAL	PRO (g)	CHO (g)	FAT (g)	PUFA (g)	SFA (g)	CHOL (mg)	A (RE)	C (mg)	B-1 (mg)	B-2 (mg)	NIA (mg)	Ca (mg)	Fe (mg)	Na (mg)
Vegetables																
Broccoli, frozen, chopped 1/2 cup	92	25	2.9	4.9	0.1	0.1	0	0	174	37	0.05	0.08	0.4	47	0.56	22
Carrots, canned, 1/2 cup slices	73	17	0.5	4	0.1	0.1	0	0	1006	2	0.01	0.02	0.4	19	0.47	176
Green beans, canned, 1/2 cup	68	13	0.8	3.1	0.1	0	0	0	24	3	0.01	0.04	0.1	18	0.61	170
Lettuce salad, 1/2 cup shredded	28	5	0.4	1	0.1	0	0	0	53	5	0.01	0.02	0.1	19	0.39	3
Potatoes, hash brown, homemade 1/2 cup	78	163	1.9	16.6	10.9	1.3	4.2	*	*	5	0.06	0.02	1.6	6	0.63	19
Spinach, 1/2 cup boiled	90	21	2.7	3.4	0.2	0.1	0	0	737	9	0.09	0.21	0.44	122	3.21	63
Tomato, 1 raw	123	24	1.1	5.3	0.3	0.1	0	0	139	22	0.07	0.06	0.7	8	0.59	10
Fruits																
Apple, raw w/ skin 1 med.	138	81	0.3	21.1	0.5	0.1	0.1	0	7	8	0.02	0.02	0.1	10	0.25	1
Apricots, raw 3 med.	106	51	1.5	11.8	0.4	0.1	0	0	277	11	0.03	0.04	0.6	15	0.58	1
Banana, raw 1 med.	114	105	1.2	26.7	0.6	0.1	0.2	0	9	10	0.05	0.11	0.6	7	0.35	1
Grapes, raw 1 cup	92	58	0.6	15.8	0.3	0.1	0.1	0	9	4	0.09	0.05	0.3	13	0.27	2
Kiwi, raw 1 med.	76	46	0.8	11.3	0.3	*	*	*	13	75	0.02	0.04	0.4	20	0.31	4
Orange, raw 1 med.	140	65	1.4	16.3	0.1	0	0	0	26	80	0.12	0.06	0.4	56	0.17	1
Orange juice, from concentrate, 8 fl. oz.	249	112	1.7	26.8	0.1	0	0	0	19	97	0.20	0.05	0.5	22	0.24	2
Orange juice, fresh, 8 fl. oz.	248	111	1.7	25.8	0.5	0.1	0.1	0	50	124	0.22	0.07	0.1	27	0.50	2
Peach, raw 1 med.	87	37	0.6	9.7	0.1	0	0	0	47	6	0.02	0.04	0.9	5	0.10	0
Pear, canned light syrup, 1 cup	251	144	0.5	38.1	0.1	0	0	0	0	2	0.03	0.04	0.4	13	0.70	13
Plum, raw 1 med.	66	36	0.5	8.6	0.4	0.1	0	0	21	6	0.03	0.06	0.3	2	0.07	0
Prune juice, 8 fl. oz.	256	181	1.6	44.7	0.1	0	0	0	1	11	0.04	0.18	2	30	3.03	11
Raisins, seedless 2/3 cup	100	300	3.2	79.1	0.5	0.1	0.2	0	1	3	0.16	0.09	0.8	49	2.08	12
Strawberries, raw, 1 cup	149	45	0.9	10.5	0.6	0.3	0	0	4	85	0.03	0.10	0.3	21	0.57	2
Breads and Cereals, Rice, and Pasta																
Bran flakes, 3/4 cup 1 oz.	28	93	3.6	22.2	0.5	*	*	*	375	*	0.40	0.40	5	14	8.10	264
Macaroni, enriched, cooked 1 cup	140	159	5.2	33.7	0.7	*	*	0	*	0	0.20	0.11	1.5	11	2.25	1
Oatmeal, quick, old fashioned, 1/3 cup dry	28	109	4.6	18.4	1.9	*	*	*	*	*	0.19	0.03	0.2	14	1.08	1
Oatmeal, w/ raisins and spice 1 pkg. prep.	158	161	4.3	31.8	1.8	*	*	*	440	*	0.51	0.36	5.5	165	6.58	225
Popcorn, air popped, 1 cup	6	23	0.8	4.6	0.3	*	0	*	*	1	*	0.01	0.1	1	0.20	0
Popcorn, w/ fat and salt, 1 cup	9	41	0.9	5.3	2	*	0.9	*	*	0	*	0.01	0.2	1	0.20	175
Pretzels, 1 oz.	28	111	2.6	22.4	1	*	*	*	*	0	0.09	0.07	1.2	7	0.55	451
Rice, white enriched, cooked, 1/2 cup	80	85	2	19	0	0	0	0	0	0	0	0	1	22	0.70	0
Rolls, dinner/pan 1 roll	28	85	2.4	14	2.1	*	*	*	*	0	0.14	0.09	1.1	33	0.83	155
Wheat bread, 1 slice	24	61	2.3	11.3	1	*	*	0	*	0	0.11	0.08	1.1	30	0.84	129
White bread, 1 slice	24	64	2	11.7	0.9	*	*	*	*	0	0.11	0.07	0.9	30	0.68	123
Whole wheat bread, 1 slice	25	61	2.4	11.4	1.1	*	*	*	*	0	0.09	0.05	1	18	0.86	159

FOODS	WT (g)	KCAL	PRO (g)	CHO (g)	FAT (g)	PUFA (g)	SFA (g)	CHOL (mg)	A (RE)	C (mg)	B-1 (mg)	B-2 (mg)	NIA (mg)	Ca (mg)	Fe (mg)	Na (mg)
Milk, Yogurt, and Cheese																
Lowfat milk 2% fat, 8 fl. oz.	244	121	8.1	11.7	4.7	0.2	2.9	18	140	2	.10	.40	0.2	297	122	122
Skim milk, 8 fl. oz.	245	86	8.4	11.9	0.4	0	0.3	4	149	2	.09	.34	0.2	302	0.10	126
Skim (nonfat dry milk) 8 fl. oz.	245	90	8.8	12.3	0.6	0	0.4	5	149	2	.10	.43	0.2	316	0.12	130
Whole milk, 3.3% fat 8 fl. oz.	227	150	8.0	11.4	8.2	0.3	5.1	33	76	2	.09	.40	0.2	291	0.12	120
Lowfat yogurt 8 fl. oz.	227	144	11.9	16	3.5	0.1	2.3	14	36	2	.10	.49	0.3	415	0.18	159
Fruit flavor yogurt 8 fl. oz.	28	225	9.0	42.3	2.6	0.1	1.7	10	27	1	.08	.37	0.2	314	0.14	121
American, processed cheese 1 oz.	28	106	6.3	0.5	8.9	0.3	5.6	27	82	0	.01	.10	0	124	0.11	406
Cheddar cheese, 1 oz.	28	114	7.1	0.4	9.4	0.3	6.0	30	86	0	.01	.11	0	204	0.19	176
Monterey cheese, 1 oz.	28	106	6.9	0.2	8.6	*	*	*	*	0	*	.11	*	212	0.20	152
Mozzarella cheese, 1 oz.	28	79	7.8	0.9	4.9	0.1	3.1	15	54	0	.01	.10	0	207	0.07	150
Swiss cheese, 1 oz.	28	107	8.1	1	7.8	0.3	5	26	72	0	.01	.10	0	272	0.05	74
Ice cream, vanilla 10% fat 1 cup	133	269	4.8	31.7	14.3	0.5	8.9	59	133	1	.05	.33	0.1	176	0.12	116
Meat, Poultry, Fish, Dry Beans and Peas, Eggs, Nuts and Seeds																
Bacon, cured, 3 med. pieces	19	109	5.8	0.1	9.4	1.1	3.3	16	0	6	0.13	0.05	1.4	2	0.31	303
Beef, ground, baked well done 3.5 oz.	100	274	30.3	0	16	0.6	6.3	107	*	0	0.05	0.31	5.4	9	2.96	64
Beef and vegetable stew, 1 cup	245	218	15.7	15.2	10.5	*	4.9	*	*	17	0.15	0.17	4.7	29	2.90	91
Chicken, light meat w/o skin, roasted	100	173	30.9	0	4.5	1	1.3	85	9	0	0.07	0.12	12.4	15	1.06	77
Egg, 1 large fried	46	83	5.4	0.5	6.4	0.7	2.4	246	83	0	0.03	0.13	0	26	0.92	144
Peanut butter, 1 Tbsp.	16	95	4.6	2.2	8.2	2.5	1.7	0	*	*	0.01	0.01	1.9	5	0.30	75
Peanuts, dry roasted 1 oz.	28	164	6.6	6.0	13.9	4.4	1.9	0	0	0	0.12	0.03	3.8	15	0.63	228
Peanuts, oil roasted 1 oz.	28	165	7.6	5.3	14	4.4	1.9	0	0	0	0.08	0.03	4.2	24	0.54	4
Pinto beans, 1 cup boiled	171	235	14	43.9	0.9	0.3	0.2	0	0	4	0.32	0.16	0.7	82	4.47	3
Pork chops w/brown gravy 6.5 oz. entree	184	252	22.1	4.4	16.2	*	*	*	*	1	0.43	0.20	4.3	9	2.50	367
Sausage, fresh 1 link	13	48	2.6	0.1	4.1	0.5	1.4	11	*	0	0.10	0.03	0.6	4	0.16	168
Sunflower seeds, 1 oz.	28	165	5.5	6.8	14.1	9.3	1.5	0	*	*	0.03	0.07	2	20	1.1	1
Fast Foods																
Cheeseburger, 1 reg. sandwich	112	299	14.8	28.3	15.1	*	*	45	*	1	0.26	0.24	3.7	136	2.33	672
French fries, 3 oz.	85	274	3.4	33.1	14.2	*	*	14	*	5	0.11	0.03	1.8	14	0.71	30
Hamburger, w/ 4 oz. meat	174	444	24.9	37.6	21.1	*	*	71	*	2	0.38	0.38	7.8	75	4.84	762
Pizza, cheese 1 slice	120	290	14.6	39.1	8.6	*	*	56	*	2	0.34	0.29	4.2	220	1.61	698
Pizza, pepperoni 1 slice	120	306	13	36.7	11.5	*	*	*	*	2	0.32	0.29	5.1	196	2.52	817

FOODS	WT (g)	KCAL	PRO (g)	CHO (g)	FAT (g)	PUFA (g)	SFA (g)	CHOL (mg)	A (RE)	C (mg)	B-1 (mg)	B-2 (mg)	NIA (mg)	Ca (mg)	Fe (mg)	Na (mg)
Miscellaneous																
Cola, 12 fl. oz.	370	151	0.1	38.5	0.1	*	*	0	0	0	0	0	0	9	0.13	14
Cola, diet, 12 fl. oz.	355	2	0.2	0.3	0	0	0	0	0	0	0.02	0.08	0	12	0.11	21
Orange soda, 12 fl. oz.	372	179	0	45.8	0	*	*	0	*	0	0	0	0	15	0.26	52
Milk choc. bar, 1.65 oz.	47	254	3.8	27.1	14.5	*	*	*	*	*	0.04	0.17	0.2	94	0.52	35
Milk choc. w/ almonds	28	151	2.6	14.5	10.1	*	4.5	*	*	0	0.02	0.12	0.2	65	0.50	23
Peanut butter and choc. bar, 2 oz.	57	260	4	38	12	*	*	*	*	*	*	*	*	*	*	100
Peanut bar, 1.6 oz.	45	240	8	21	14	*	*	*	*	*	*	*	*	*	*	110
Bite-size fruit snacks, 1 pouch	26	100	1	21	2	*	*	*	*	*	*	*	*	*	*	105
Corn chips, 1 oz.	28	153	1.7	16.6	8.8	*	*	*	*	0	0.05	0.3	0	2	*	218
Potato chips, 1 oz.	28	148	1.8	14.7	10.1	5.2	2.6	0	0	12	0.04	0.01	1.2	7	0.34	133
Tortilla chips, reg. or nacho 1 oz.	28	150	2	18	8	*	*	*	*	*	*	*	*	*	*	155
Brownie w/nuts—homemade 1 brownie	20	97	1.3	10.2	6.3	*	1.4	*	*	0	0.04	0.02	0.1	8	0.40	50
Cake, devil's food—homemade 1 piece	60	227	3.4	30.4	11.3	*	*	*	*	0	0.08	0.11	0.7	68	1.03	160
Doughnuts, yeast, 1 doughnut	42	176	2.7	16	11.3	*	2.8	*	*	0	0.07	0.07	0.6	16	0.60	99
Pie, cherry—homemade, 1/8 pie	118	308	3.1	45.3	13.3	*	3.5	*	*	0	0.02	0.02	0.6	17	0.40	359
Margarine, soft 1 Tbsp.	*	100	0	0	11	4	2	0	*	*	*	*	*	*	*	95
Molasses, blackstrap, 1 Tbsp.	20	43	0	11	0	0	0	*	*	*	0.02	0.04	0.4	137	3.20	19
Salad dressing—thousand island, 1 Tbsp.	16	59	0.1	2.4	5.6	3.1	0.9	*	50	*	*	*	*	2	0.10	109
Sugar, white granulated, 1 tsp.	4	15	0	4	0	0	0	*	*	0	0	0	0	0	0	0

Sources: USDA Food Handbooks

*Denotes "information not available." Do not assume that the value would be zero.

LEGEND

WT=weight
KCAL=calories
PRO=protein
CHO=carbohydrate
FAT=fat
PUFA=polyunsaturated fatty acids
SFA=saturated fatty acids
CHOL=cholesterol
A(RE)=vitamin A (retinol equivalent)
C=vitamin C (ascorbic acid)
B-1=vitamin B-1 (thiamin)
B-2=vitamin B-2 (riboflavin)
NIA=niacin
Ca=calcium
Fe=iron
Na=sodium

The nutrient data provided in Appendix E: Food Composition Table should be seen only as an approximation and used strictly as a guide in learning activities.

The many factors which affect the amounts of nutrients in foods include:

- animal diets
- mineral content of soil
- types of fertilizer used on samples
- season of the year
- method of storage
- length of storage
- processing methods
- methods of analysis
- moisture content of analyzed samples
- method of food preparation

Therefore, many different nutrient values will be reported in a variety of reliable resources.

Appendix F

Nutrition and Your Health:
DIETARY GUIDELINES FOR AMERICANS

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1 Eat a variety of foods.

People need more than forty different nutrients for good health. Essential nutrients include vitamins, minerals, amino acids from protein, certain fatty acids from fat, and sources of calories (protein, carbohydrates, and fat). These nutrients should come from a variety of foods, not from a few highly fortified foods or supplements. Get the nutrients needed by choosing different foods you enjoy eating from five major food groups. These groups are vegetables, fruits, grain products, milk and milk products, and meats and meat alternatives.

2 Maintain desirable weight.

Being overweight or underweight increases chances of developing health problems. Obesity is common in the United States. It is linked with high blood pressure, heart disease, stroke, the most common type of diabetes, certain cancers, and other types of illness.

3 Choose a diet low in fat, saturated fat, and cholesterol.

The higher levels of saturated fat and cholesterol in the diet are linked to increased risk for heart disease. A diet low in fat makes it easier to include the variety of foods you need for nutrients without exceeding your calorie needs because fat contains over twice the calories of an equal amount of carbohydrates or protein.

4 Choose a diet with plenty of vegetables, fruits, and grain products.

Vegetables, fruits, and grain products are important parts of a varied diet discussed in the first guideline. They are emphasized in this guideline especially for their complex carbohydrates, dietary fiber, and other food components linked to good health.

5 Use sugars only in moderation.

Sugars and many foods that contain them in large amounts supply calories but are limited in nutrients. Thus, they should be used in moderation by most healthy people and sparingly by people with low calorie needs. The more often these foods—even in small amounts—are eaten the greater the risk for tooth decay.

6 Use salt and sodium only in moderation.

Table salt contains sodium and chloride—both are essential in the diet. However, most Americans eat more salt and sodium than they need. In the United States, about one in three adults has high blood pressure. If these people restrict their salt and sodium, usually their blood pressure will fall.

7 Avoid alcoholic beverages.

Drinking alcoholic beverages is illegal in Texas for people under age 21. Heavy drinking of alcoholic beverages is related to malnutrition, liver disease, and some forms of cancer. Drinking alcoholic beverages during pregnancy can damage the developing fetus. People who drink alcoholic beverages before driving increase their risk of car accidents.

Sources: U.S. Department of Agriculture and U.S. Department of Health and Human Services *Home and Garden Bulletin* No. 232, "Nutrition and Your Health: Dietary Guidelines for Americans," Third edition, 1990.
U.S. Department of Agriculture and Human Nutrition Information Service, *Dietary Guidelines and Your Diet: Home Economics Teacher's Guide*, February 1988.

Appendix G
Glossary

Additive–A substance added to a food product to improve nutritional value, color, flavor, texture, or shelf life.

Amino Acids–The structural units of proteins.

Anorexia Nervosa–An eating disorder characterized by an obsessive and compelling desire to be thin.

Artificial Sweeteners–Synthetic substances used as sweetening agents in foods and beverages.

Atherosclerosis–An accumulation of lipid plaque within the arterial wall which results in a narrowing of the artery; sometimes referred to as "hardening of the arteries."

Bacteria–Single-celled organisms that can live anywhere people can live.

Basal Metabolism–The amount of energy your body needs to maintain basic processes at rest.

Bulimia Nervosa–An eating disorder characterized by self-induced vomiting or by the use of laxatives following binge eating.

Calorie–A unit of measure used to state the energy content of different foods. It is referred to as "kcalorie" in most science and nutrition texts.

Carbohydrate Loading–A diet that is very high in complex carbohydrates. Four or five days prior to an event lasting more than two hours, about 65-70 percent of total calories are consumed as complex carbohydrates in an attempt to increase muscle glycogen stores.

Carbohydrates–Nutrients that supply energy for body functions; simple carbohydrates are called sugars. Starch, glycogen, and some fibers are complex carbohydrates.

Cardiovascular Disease–A term that covers all of the diseases of the heart and blood vessels.

Cellulose–The fibrous material found in plants that is commonly referred to as fiber or roughage. It is indigestible by humans.

Cholesterol–An odorless, soft, waxy substance found in every cell in the body.

Colostrum–A thick alkaline fluid with a lemon yellow color, suited to the immature digestive enzyme system of the newborn. It is rich in protein and also contains antibodies.

Complementary Proteins–The combining of two or more foods that each lack some amino acids in such a way that the essential amino acids are supplied by the other.

Complete Proteins–Proteins that come from animal sources such as meat, milk, cheese, eggs, poultry and fish. Complete proteins supply all of the essential amino acids.

Complex Carbohydrates–Starches, glycogen, and fibers.

Cruciferous–Vegetables in the cabbage family whose leaves form a cross. They have been shown to protect against cancer in laboratory animals.

Culture–The knowledge, beliefs, customs, and traditions shared by a group of people within a society.

Custom–A practice or way of doing things that has been handed down from one generation to the next.

Deficiency–Lacking in something essential. Nutritional deficiency occurs when sufficient amounts of essential nutrients are not present in the diet.

Diabetes–A genetic disorder in which the body does not produce or properly use insulin. It is the inability of the body to metabolize or use glucose, also known as sugar, properly.

Disaccharides–Carbohydrate that is formed when two glucose molecules are joined together.

Ethnic Group–A group of people with common racial and/or cultural characteristics such as religion, language, national origin, or tradition which makes them a distinct subgroup of society. These characteristics are based on physical or cultural traits or both.

Electrolytes–Minerals that affect the way fluid is distributed in the body and aid the nervous system in transmitting the nerve impulses that control muscle action.

Enrichment–The process in which the nutrients that have been lost in processing are replaced in amounts equal to those originally present or in increased amounts.

Essential Amino Acids–Amino acids that must be provided by the diet. The body cannot produce essential amino acids sufficiently to meet the body's needs. There are nine essential amino acids.

Fat–Semisolid, energy-filled organic compounds called lipids that are found in animal and plant tissues. The body stores excess energy in the form of fat.

Fat-soluble Vitamins–Vitamins A, D, E, and K. They cannot be dissolved in water, so they are stored in body fat until they are transported to the cells by the blood.

Fiber–A group of substances found in plants that the body's digestive tract is unable to break down.

Food Binge–The overindulgence of food without control or rational judgment concerning the amount being consumed.

Food Chain–The system in which matter and energy are transferred from organism to organism in the form of food.

Food Web–The linkage of organisms to one another by their dependence on each other for food.

Food-borne Infection–A disease caused by eating food containing harmful microorganisms.

Food-borne Intoxication–An illness caused by poisons or toxins in the food a person eats.

Formulated Foods–Food products developed to supplement diets and feeding programs for people who are malnourished or suffering from some nutritional deficiency. Also includes foods that combine nutrients into the exact proportions needed by a certain group of people such as formulas for feeding babies.

Fortification–The addition of nutrients that may or may not be found naturally in a product.

Glucose–The major sugar found in the bloodstream that supplies energy to the body.

Glycogen–The body's storage form of glucose.

Hypertension–High blood pressure.

Incomplete Proteins–Protein foods that do not contain all of the essential amino acids needed by the body.

Lactation–The secretion or formation of milk; the period of milk production.

Lactovegetarian Diet–A diet that consists of only plant foods and dairy products.

Lacto-ovo-vegetarian Diet–A diet that consists of only plant foods, dairy products, and eggs.

Light or Lite–There are no legal definitions for this term.

Linoleic Acid–One of the essential fatty acids that must be provided in the diet. It is found in leafy, green vegetables and corn, safflower, and soybean oils.

Lipids–A term used interchangeably with the word fat to describe fats, oils, and fat-related substances.

Macrominerals–Minerals found in large amounts in the body.

Malnutrition–The term that refers to either undernutrition or overnutrition.

Meat Analogues–Food products made from plant proteins that have been shaped and formed to resemble meat products. An example is tofu.

Megadose–Large doses of nutrients, usually vitamins, for treatment or prevention of an ailment, often self-prescribed.

Microminerals–Minerals that are found in small amounts in the body; they are also called trace elements.

Microorganisms–Organisms that are so small they can only be seen through a microscope. They include molds, yeasts, and bacteria.

Monosaccharides–The simplest form of carbohydrates.

Monounsaturated Fats–Fats that have less hydrogen than saturated fats; can be found in avocados, peanut oil, canola oil, and olive oil.

Nutrient Density–A description of the amount of nutrients a food contains compared to its calories.

Nutrient–Life sustaining chemical substances that nourish and promote the growth of the human body.

Nutrients–Invisible substances that work with the body to help people grow and have energy for work and play.

Nutrition–The study of nutrients and how the body uses them.

Oil-free–A food that contains no oil, no fat, and is cholesterol free, unless egg yolks are included.

Oils–Lipids that are in a liquid state at room temperature.

Plaque–Mounds of lipid matter that accumulate on the inner walls of the arteries.

Polysaccharides–Complex carbohydrates.

Polyunsaturated Fats–Fats that come from vegetable oils and fish oils.

Promoter–A substance that does not initiate cancer but does favor its development once the initiating event has occurred.

Protector Foods–Foods that may help lower the risk of certain cancers.

Protein Packing–A diet that overloads on protein.

RDA–The Recommended Dietary Allowances for Americans that serves as a guideline for determining the amounts of nutrients a normal, healthy individual needs each day.

Reduced Calorie–A food label term that refers to a food that contains at least one-third fewer calories than the food it most resembles.

Refinement–The removal of the bran and germ from cereal grains during processing. These cereals provide only calories and incomplete protein unless they have been enriched.

Restoration–The process of replacing nutrients in a food product that were lost during processing.

Saturated Fats–Fats that are found in animal foods such as meat and dairy products and in oils such as coconut oil and palm oil.

Shelf Life–The length of time a food holds its original flavor and quality.

Simple Carbohydrates–Any of the sugars.

Standard of Identity–Specifications set by the FDA that list the ingredients a food must contain if it is to be called by a particular name (catsup, mayonnaise, ice cream, etc). The ingredients do not have to be listed on the food label if the product meets the standard of identity.

Starch–The most abundant polysaccharide; a complex form of carbohydrate.

Stir-frying–The quick cooking and stirring of foods in a tiny amount of oil or fat over high heat.

Synthetic Foods–Manufactured food products that are made from artificial chemicals that resemble those naturally found in foods.

Thermic Effect of Food–The amount of energy used by the body during digestion and absorption of nutrients from food.

Tofu–A cake-like product made from soybeans and water into a bean curd high in protein with few calories.

Triglycerides–The chemical structure of fat that contains carbon, hydrogen, and oxygen atoms. Most fats in the body and in food are in the form of triglycerides.

Unit Pricing–A system in which stickers on store shelves give costs per unit of weight or per quantity for each product.

Vegen Diet–A diet that consists of only plant foods such as fruits, vegetables, legumes, nuts, seeds, and grains. All animal products are omitted from the diet.

Vegetarian Diet–A diet consisting only or primarily of plant products; no meat is consumed.

Viruses–The smallest and perhaps simplest form of life known. They cause illnesses such as colds, influenza, and infectious hepatitis.

Vitamins–Organic compounds that are necessary in the diet in small amounts for normal growth, maintenance of health, and reproduction.

Water-soluble Vitamins–Vitamins that are easily dissolved by water and therefore are not stored in the body; the B vitamins and vitamin C.

Whole Grain–Grains and grain products containing the entire seed of the plant including the bran, the germ, and the endosperm.

Yeasts–Fungi that require sugar, moisture, and proper temperature for survival.

Appendix H
Suggested Instructional Strategies

1. abstracts
2. advertisement
3. art gallery
4. attitude scales
5. block picture story
6. book cover
7. brainstorming
8. bulletin board
9. buzz groups
10. cardboard relief
11. cartoons
12. case study
13. chart
14. checklist
15. choral reading
16. cinquain
17. city council meeting
18. collage
19. computer games
20. computer reviews
21. computer problems
22. construction
23. costume
24. creative writing
25. crosscut diagram
26. debate
27. demonstration of a technique
28. diagrams/drawings
29. diamante
30. diorama
31. discussions
32. ditto
33. editorial
34. essay
35. exhibits
36. experiment
37. fact file
38. fairy tale
39. field trips
40. films
41. flannel boards
42. flip book
43. game board
44. geometric shapes
45. glossary
46. greeting card
47. guest speaker
48. haiku
49. illustrated story
50. interrupted film
51. interview
52. jigsaw puzzle
53. journals
54. laboratory experiences
55. letter (friendly)
56. letter to the editor
57. limerick
58. magazines
59. maps
60. minicenters
61. mobiles
62. models
63. movie making
64. mural
65. museum
66. newscast
67. newspaper story
68. news report
69. observation
70. one-act play
71. oral report
72. pamphlet
73. panel discussion
74. pantomime
75. photo essay
76. picture dictionary
77. picture with information and diagram
78. pictures (photographs)
79. play
80. poem
81. poster
82. project cube
83. puppet
84. puppet show
85. questionnaires
86. rating scales
87. rebus story
88. recordings
89. role playing
90. samples
91. science fiction story
92. score cards
93. scrapbook
94. simulation experiences
95. skit
96. slides
97. song (original)
98. songs (collection)
99. stained glass
100. stencil
101. stitchery
102. story
103. storytelling
104. survey
105. taped recording
106. television game show
107. textbook
108. town meeting
109. transparency
110. T-shirt design
111. vocabulary
112. window-shade story, game, poster
113. worksheet
114. written reports

Appendix I
Health Hotline of Agencies and Organizations

Eating Disorders

American Anorexia/Bulimia Association, Inc.
133 Cedar Lane
Teaneck, New Jersey 07666
(210) 836-1800

Anorexia Nervosa and Associated Disorders, Inc.
P.O. Box 7
Highland Park, Illinois 60035

Bulimia, Anorexia Self-Help
6125 Clayton Ave., Suite 215
St. Louis, Missouri 63139
(800) 227-4785

Center for the Study of Anorexia and Bulimia
One W. 91st St.
New York, New York 10024
(212) 595-3449

National Anorexic Aid Society, Inc.
5796 Karl Road
Columbus, Ohio 43229
(614) 436-1112

Food Labeling, Legislation, Policy, and Safety

Center for Food Safety and Applied Nutrition
Food and Drug Administration
200 C St. S.W., Room 3321
Washington, D.C. 20204
(202) 245-1236

Center for Science in the Public Interest
1501 16th St. N.W.
Washington, D.C. 20036
(202) 332-9110

Food and Drug Administration, Consumer Inquiries
5600 Fishers Lane
Rockville, Maryland 20857
(301) 443-3170

Food Safety and Inspection Service
Information Division
Department of Agriculture
14th St. and Independence Ave. S.W.
Washington, D.C. 20250
(202) 447-9113

Nutrition Education and Health Information

American Cancer Society
Medical Library
4 West 34th St.
New York, New York 10001
(212) 736-3030

American Diabetes Association
505 8th Ave.
New York, New York 10018
(212) 947-9707

American Heart Association
7320 Greenville Ave.
Dallas, Texas 75231
(214) 750-5300

Centers for Disease Control
Office of Public Affairs
1600 Clifton Road N.E.
Atlanta, Georgia 30333
(404) 329-3286

Juvenile Diabetes Foundation
60 Madison Ave.
New York, New York 10010
(800) 223-1138

National Diabetes Information Clearinghouse
Box NDIC
Bethesda, Maryland 20892
(301) 468-2162

Beltsville Human Nutrition Research Center
Ag Research Service
U.S. Department of Agriculture
Room 223, Bldg. 308
Beltsville, Maryland 20705
(301) 244-2157

National Cancer Institute
NIH Bldg. 31, Room 10A18
Bethesda, Maryland 20892
(301) 496-5583

Bureau of Health Care Delivery and Assistance
Health Resources and Services Administration
Public Health Service
Parklawn Building, Room G-05
5600 Fishers Lane
Rockville, Maryland 20857
(301) 443-2320

Community Nutrition Institute
2001 S St. N.W.
Washington, D.C. 20009
(202) 462-4700

Human Nutrition Information Service
Food and Consumer Services
U.S. Department of Agriculture
6505 Belcrest Road
Hyattsville, Maryland 20782
(301) 436-7725

National Health Information Clearinghouse
P.O. Box 1133
Washington, D.C. 20013
(800) 336-4797

President's Council on Physical Fitness and Sports
450 Fifth St. N.W., Room 7103
Washington, D.C. 20001
(202) 272-3421

Tufts University Diet and Nutrition Letter
80 Boylston St., Suite 353
Boston, Massachusetts 02116
(617) 482-3530

American Dietetic Association
126 W. Jackson Boulevard, Suite 800
Chicago, Illinois 60606-6995
(800) 366-1655

National Dairy Council
6300 N. River Road
Rosemont, Illinois 60018-4233
(708) 696-1860

Nutrition Education and Training Program
Texas Department of Human Resources
The Library 434-W
701 West 51st Street
P.O. Box 2960
Austin, Texas 78769
(512) 450-3530

Texas Agricultural Extension Service
Special Services Bldg., Room 205 B
Texas A&M University
College Station, Texas 77843
(409) 845-1146

Food Industry Associations

Food Marketing Institute
1750 K St. N.W.
Washington, D.C. 20006
(202) 452-8444

Food Processors Institute
1401 New York Ave. N.W., Suite 400
Washington, D.C. 20005
(202) 393-0890

Grocery Manufacturers of America
1010 Wisconsin Ave. N.W., Suite 800
Washington, D.C. 20007
(202) 337-9400

Milk Industry Foundation
888 16th St. N.W., 2nd Floor
Washington, D.C. 20006
(202) 296-4250

National Association of Wheat Growers
415 Second St. N.E., Suite 300
Washington, D.C. 20002
(202) 547-7800

National Meat Association
734 15th St. N.W.
Washington, D.C. 20005
(202) 347-1000

Wheat Flour Institute
600 Maryland Ave. S.W.
Washington, D.C. 20024
(202) 484-2200

Texas Beef Industry Council
8310 Capitol of Texas Highway
Austin, Texas 78731
(512) 345-3531

Associated Milk Producers, Inc. (AMPI)
Consumer Services
P.O. Box 5007
Arlington, Texas 76005
(817) 461-2674

Florida Department of Citrus
School Marketing Department
P.O. Box 148
Lakeland, Florida 33802

National Livestock and Meat Board
444 N. Michigan Ave.
Chicago, Illinois 60611

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Texas Education Agency
1701 North Congress Avenue
Austin, Texas 78701

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